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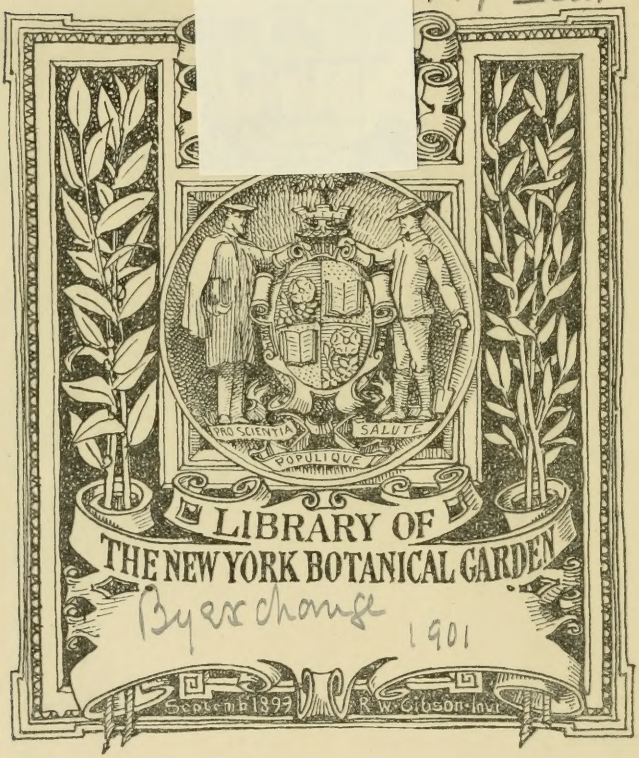
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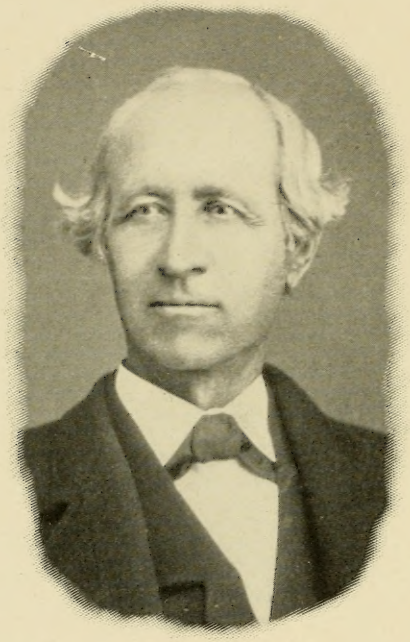

Peter McGideon.

LATE OF EXCELSIOR, MINN.

[For biography, etc., see page 20.]

Trees, Fruits and Flowers

OF

MINNESOTA.

1900.

LIBRARY,
NEW YORK
BOTANICAL
GARDEN.

EMBRACING THE TRANSACTIONS OF THE

MINNESOTA STATE HORTICULTURAL SOCIETY

FROM DECEMBER 1, 1899 TO DECEMBER 1, 1900,
INCLUDING THE
TWELVE NUMBERS OF "THE MINNESOTA HORTICULTURIST"
FOR 1900.

EDITED BY THE SECRETARY,

A. W. LATHAM,

OFFICE AND LIBRARY, 207 KASOTA BLOCK,

MINNEAPOLIS, MINN.

Official Stenographer, A. G. LONG, Excelsior, Minn.

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THE MINNESOTA HORTICULTURIST.

VOL. 28. JANUARY, 1900. No. 1.

OFFICERS.

1900.

MINNESOTA STATE HORTICULTURAL SOCIETY.

PRESIDENT.

W. W. PENDERGAST.....Hutchinson

VICE-PRESIDENTS.

F. W. KIMBALL, First Congressional Dist.....Austin
S. D. RICHARDSON, Second " " ...Winnebago City
MRS. A. A. KENNEDY, Third " " .....Hutchinson
VINCENT BAILEY, Fourth " " ..St. Anthony Park
COL. J. H. STEVENS, Fifth " " ..... Minneapolis
MRS. JENNIE STAGER, Sixth " " .....Sauk Rapids
D. T. WHEATON, Seventh " " .....Morris

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Office and Library, 207 Kasota Block.

TREASURER.

H. M. LYMAN.....Excelsior

EXECUTIVE BOARD.

(The president and secretary are members *ex-officio*.)

WYMAN ELLIOT, (Chairman), 1 year.....Minneapolis
J. S. HARRIS, 1 year.....La Crescent
J. P. ANDREWS, 2 years.....Faribault
L. R. MOYER, 2 years.....Montevideo
PROF. S. B. GREEN, 3 years.....St. Anthony Park
CLARENCE WEDGE, 3 years..... Albert Lea

ASSISTANT LIBRARIAN.

E. A. CUZNER, Essex and 27th Ave. S. E.....Minneapolis

(The Assistant Librarian has charge of the surplus reports of the society, which are stored at Pillsbury Hall, State University.)

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1900.

PROF. S. B. GREEN, (State Exp'mt Station) St. Anthony Park
E. H. S. DARTT.....Owatonna
DEWAIN COOK.....Windom
CHAS. W. SAMPSON, (grapes).....Eureka
O. M. LORD, (plums and small fruits).....Minnesota City
H. M. LYMAN, (apples).....Excelsior
J. S. HARRIS.....La Crescent
L. R. MOYER.....Montevideo
MRS. JENNIE STAGER.....Sauk Rapids
WILLIAM SOMERVILLE.....Viola
J. S. PARKS.....Pleasant Mounds

STANDING COMMITTEES FOR 1900.

FRUIT LIST.

Clarence Wedge.....Albert Lea
J. P. Andrews.....Faribault
Prof. S. B. Green.....St. Anthony Park

SEEDLING FRUITS.

J. S. Harris.....La Crescent

ORNAMENTAL LIST.

F. H. Nutter.....Sykes Block, Minneapolis
L. R. Moyer.....Montevideo
Fred Nussbaumer.....St. Paul

NOMENCLATURE AND CATALOGUE.

J. S. Harris.....La Crescent
Prof. S. B. Green.....St. Anthony Park
Prof. N. E. Hansen.....Brookings, S. D.

LEGISLATURE.

Wyman Elliot.....Minneapolis
J. M. Underwood.....Lake City
D. R. McGinnis.....St. Paul
J. S. Harris.....La Crescent
Prof. W. M. Hays.....St. Anthony Park
A. W. Latham.....Minneapolis

PUBLICATION.

Prof. S. B. Green.....St. Anthony Park
Wyman Elliot.....Minneapolis
A. W. Latham.....Minneapolis

CONSTITUTION OF THE MINNESOTA STATE HORTICULTURAL SOCIETY.

As Amended Dec. 8, 1899.

Article I.—Name.—This society shall be known as the Minnesota State Horticultural Society.

Article II.—Its object.—The object of this society shall be the advancement of the art and science of horticulture throughout the state.

Article III.—Membership.—Any person may become an annual member by paying to the secretary an annual fee of $1.00, or a life member by the payment of $10.00, provided that the life fee may be paid in two annual payments of $5.00 each. The members of any local horticultural society, the annual fee of which is not less than $1.00, may become annual members of this society, provided such local society shall send to the annual meeting of this society a duly authorized delegate, and shall transmit to the secretary a properly certified list of its members, an annual report of its proceedings, together with the papers read at its meetings, and an annual fee of twenty-five cents for each member of such local society.

All memberships shall expire at the close of the first day of the next annual meeting. Honorary members for the time stated, or for life, may be elected at any annual meeting by a two-thirds vote of the members present, provided that the name proposed for this purpose shall be first referred to the executive board. Every member shall be entitled to one copy of the transactions, postpaid, as often as published.

No member shall vote on any proposed amendment to the constitution or by-laws or at any election of officers except those who have been members for not less than two consecutive years immediately preceding that in which the election is being held.

Article IV.—Officers.—Its officers shall consist of a president, one vice-president from each congressional district, a secretary, a treasurer, a librarian and an executive board of six. All officers shall be elected separately and by ballot cast personally by the membership, and shall hold office until their successors are elected and qualified, except that the vice-presidents may be elected by the secretary casting therefor the ballot of the society. The annual election of officers shall take place on the afternoon of the third day of the annual meeting. All terms of office shall begin immediately upon election, and no person shall be eligible to hold office who has not been a member of the society for the three years immediately preceding. The president, vice-presidents and the treasurer shall hold their offices for one year. An executive board to consist of six members shall be elected at the first election after the adoption of this constitution. The first two members elected shall hold their office for a term of three years, the next two members shall hold their office for a term of two years, and the last two shall hold their office for a term of one year, and at each annual election thereafter two members of this board shall be elected to serve for a term of three years. The presi-

dent and secretary of this society shall be ex-officio members of the executive board. The secretary shall be elected by the executive board at its first session after the close of the annual meeting, and hold his office for one year.

Article V.—The President.—The president shall call and preside at all meetings of the society and, under the direction of the executive board, have a general superintendence of its affairs. In the absence or disability of the president, the executive board shall select one of the vice-presidents to act as president pro tempore.

Article VI.—The Vice-Presidents.—The vice-presidents shall have the general supervision of all horticultural interests in their respective districts, and as such constitute a general fruit committee, and make a report to the society at its annual winter meeting and recommend a list of fruits succeeding best in their districts. In consideration therefor the society shall pay the traveling expenses incurred in their attendance at said meeting.

Article VII.—The Secretary.—The secretary shall keep a full record of the proceedings of the society and of the executive board. He shall receive and pay over all moneys collected from members, or otherwise, to the treasurer, taking his receipt therefor. He shall, under the direction of the executive board, conduct the correspondence of the society, have charge of its books and papers, prepare its reports for publication and attend to their distribution. He shall be ex-officio librarian of the society. He shall receive for the necessary expenses of reporting the meetings, postage, stationery, printing, office rent, assistance, salary, etc., such sums as the executive board may vote therefor. He shall make a report of the work of his office at each annual meeting.

Article VIII.—The Treasurer.—The treasurer shall receive and hold all funds of the society, and pay out the same only upon the order of the president, countersigned by the secretary. He shall give such bond as the executive board may direct, to be approved by the president and filed with the secretary. He shall make a report of all receipts and disbursements of his office at the annual meeting, and at any other time when called upon to do so by the executive board.

Article IX.—The Librarian.—The librarian shall have charge of the library and report its condition at the annual meeting.

Article X.—The Executive Board.—The executive board shall, at their first meeting after the annual election, elect one of their members chairman, who shall call and preside at all meetings of the board and, as such officer, endorse all bills audited by the board. They shall have general charge of the affairs of the society, and make a report in detail at each annual winter meeting. They may call a meeting of the society at any time they deem advisable, giving at least fifteen days notice through the monthly publication of the society or by mail service on the members. It shall be their duty to audit all bills before they shall be ordered paid by the president and secretary. They shall prepare a program for each regular meeting of the society, to be issued at least two weeks before the date of such meeting. They shall appoint annual committees on fruit list, seedlings, nomenclature, small fruits, apples, vegetables, flowers and such other subjects as they deem best. They shall fill all vacancies occurring in the offices of the society by appointment, to hold good until the next annual election. They shall have full care and disposal of all funds in the treasury of the society, and shall expend the same in such manner as in their judgment shall best promote the interests of horticulture in the state. They shall serve without compensation, but be entitled

to their expenses in attendance at the meetings of the board or society.

A meeting of the executive board may be called by the chairman at any time he sees fit or upon the written request of any two members of said board, due notice being given either in person or through the mail to each member thereof. A majority of the board shall constitute a quorum for the transaction of business.

Article XI.—Meetings.—The society shall hold two regular meetings, annually, one commencing on the first Tuesday in December, to be called the annual meeting, and the other in summer at such time and place as the executive board may direct.

Article XII.—Quorum.—Ten members shall constitute a quorum at any meeting of the society.

Article XII.—Amendments.—Amendments to the constitution or by-laws may be enacted by a vote of two-thirds of the members who are entitled to vote thereon present and voting at any annual meeting, on two days notice of said amendment being given in writing.

FRUIT LIST, 1900.

(FOR THE GUIDANCE OF PLANTERS.)

Adopted by the Minnesota State Horticultural Society, December 8, 1899.

APPLES.

Of the first degree of hardiness for planting in Minnesota: Duchess, Hibernal, Charlamoff (a), Patten's Greening.

Of the second degree of hardiness: Wealthy (b), Longfield (b) (d), Tetofsky, Malinda (b) (c).

Promising varieties for trial: Okabena, Peerless, Repka Malenka, Anisim, Yellow Sweet (c), Kaump (d), Gilbert, Brett, Christmas (c), Blushed Calville, Cross 413, White Pigeon (d).

CRABS AND HYBRIDS.

Best for general cultivation: Virginia, Martha, Whitney, Early Strawberry, Minnesota (c), Sweet Russett, Gideon's No. 6, Briar's Sweet.

Promising varieties for trial: Dartt, Pride of Minneapolis, Crampton's No. 3, Lyman's Prolific, Faribault.

PLUMS.

Best for general cultivation: De Soto, Forest Garden, Weaver, Cheney, Wolf, Rollingstone, Wyant.

Most promising varieties for trial: Ocheeda, New Ulm, Stoddard, Surprise, Mankato, Aitkin.

GRAPES.

In order of their ripening: Moore's Early, Worden, Janesville (e), Brighton, Delaware, Agawam, Concord.

RASPBERRIES.

Red varieties: Turner, Marlborough, Cuthbert, Brandywine, Loudon.

Black and purple varieties: Ohio, Palmer, Nemaha, Gregg, Schaffer, Older, Souhegan, Columbian, Kansas.

BLACKBERRIES.

Ancient Briton, Snyder, Badger.

CURRANTS.

Red Dutch, White Grape, Victoria, Stewart, Long Bunch Holland, North Star.

GOOSEBERRIES.

Houghton, Downing, Champion. Varieties for trial: Red Jacket, Triumph, Pearl, Columbus.

STRAWBERRIES.

Pistillate: Crescent, Warfield, Haverland. Staminate: Bederwood, Capt. Jack, Wilson, Enhance, Lovett, Splendid, Mary.

NATIVE FRUITS.

Valuable for trial: Dwarf Juneberry, Sand Cherry, Buffalo Berry.

(a) Peterson's Charlamoff.—There are two distinct kinds under this name; the one referred to is of spreading growth and bears conical shaped fruit.

(b) Does best top-worked.

(c) Tardy bearer. (d) Early bearer. (e) For severe situations.

ANNUAL MEETING, 1899, MINNESOTA STATE HORTICULTURAL SOCIETY.

J. S. HARRIS, LA CRESCENT, AND F. H. NUTTER, MINNEAPOLIS.

The thirty-third annual meeeting and exhibition of fruit of the Minnesota State Horticultural Society was held at Minneapolis in the rooms of the county commissioners, in the Hennepin county court-house, where they have been held the last three or four years. These rooms are very convenient, giving a good assembly room, two rooms for the exhibition of fruits and other horticultural products, and a cloak room.

The attendance was fully up to that of last year and a very good and full program was fully carried out. Delegates from other societies and adjoining states present : Prof. C. B. Waldron, Fargo, N. D.; Prof. N. E. Hansen, Brookings, S. D.; Eugene Secor, Iowa State Society, Forest City, Ia.; W. J. Reeves, N. W. Iowa Society, Clear Lake, Ia.; Irving C. Smith, Wisconsin State Horticultural Society, Green Bay, Wis., and A. J. Philips, secretary of Wisconsin State Horticultural Society. There were present from our own state a number of new members, who are enthusiastic young horticulturists and promise to be diligent workers and worthy to take up and continue the work of the "Old Veterans," as they one by one depart to receive the rewards of good and faithful service, and they may henceforth depart rejoicing that the good work they have begun will be continued and that their mantle falls upon the shoulders of worthy men who will maintain the honor and dignity of the society, keeping it ever in the front ranks of associations of the kind. On account of the infirmity of age and ill health our most popular and dearly beloved pioneer member, Col. J. H. Stevens, was not able to come out to any of the sessions, but he received the sympathy and best wishes of every member present. The absence of C. L. Smith and Mrs. Jennie Stager was very noticeable, because for many years past they have always been in their places and live features of the meeting.

Our new president, W. W. Pendergast, presided over the meeting with dignity and credit to himself and entire satisfaction to the society.

The best and most profitable sessions of the meeting were held at the College of Agriculture, St. Anthony Park, Wednesday afternoon and even-

ing. Pendergast Hall was filled to its utmost capacity, a large number of the students being present. The address by Prof. N. E. Hansen, "What I Saw in Northern Europe and Siberia," illustrated with some eighty stereopticon views, was most interesting and instructive.

Another departure from the usual order was the memorial exercises on Thursday afternoon in honor of the late Peter M. Gideon, originator of the popular Wealthy apple. Very appropriate tributes were paid to his memory. The election of officers resulted in the re-election of all of those whose terms had expired, except the treasurer, C. W. Sampson. O. M. Lord was elected to take his place. But few changes were made in the fruit lists. Patten's Greening was put upon the list of the first degree of hardiness.

The exhibit of fruit was better than any one ever before made at a winter meeting of the society. In all there were about 600 plates, including apples, grapes and plums. Two hundred fifty-one entries were made.

Honorary life members were elected as follows, viz: aged veterans of the society: J. G. Bass, Hamline; S. H. Kenney, Morristown; R. Knapheide, St. Paul; Wm. Mackintosh, Langdon; Wm. Oxford, Freeburg; S. D. Richardson, Winnebago City. For distinguished services in the promotion of Western Pomology: C. G. Patten, Charles City, Iowa; Prof. N. E. Hansen, Brookings, S. D.

J. S. HARRIS.

It is doubtful if ever an annual meeting has occurred which was more thoroughly enjoyed by those present. The attendance was large though not all that might have been hoped from a membership greater than that of any other similar society in the country. While some accustomed faces were missing, new ones were there to fill their places, and from other states an unusually large number were present to represent sister organizations in Iowa, North and South Dakota, Wisconsin, and Illinois, while far off Virginia, through an enthusiastic horticulturist, sent us words of greeting.

The fruit exhibits were not so extensive as they have been on one or two previous occasions, but what might have been lacking in quantity was more than made up in quality, for rarely have they come to the tables in better condition. The awards as announced will give an idea of what was to be seen in the exhibition rooms.

One department seemed to be somewhat lacking, to the disappointment of some of the attendants, that of cut flowers and growing plants.

An examination of the printed program will show that not only the practical but the ornamental side of horticulture was considered, and the discussions were entered into with interest by many of those present.

On Wednesday morning the Bee-Keepers' Association met with us in joint session, at which Prof. Conway MacMillan, of the state university, unfolded to the audience in an interesting address the opening chapter of plant life, after which the two societies met in separate rooms. On Thursday afternoon the subject of Forestry was considered jointly with the State Forestry Association.

Wednesday afternoon and evening the members were the guests of the State Experiment Station, at St. Anthony Park, and after supper in the beautiful dining hall were entertained by the students with music both vocal and instrumental and with papers of interest, after which Prof. N. E. Hansen, of Brookings, S. D., impressed upon his hearers, both by eye and ear, many of the incidents of his recent trip to the far east. His stereopticon views were very fine, and it was a novel experience to the visitor from the north-

western prairies to gaze upon a wheat field under cultivation by a long string of camels or to be introduced to the mysteries of a city dating back to the fifth generation after Noah.

The thoughts of the society were not altogether with the living, for a portion of Thursday afternoon was devoted to the memory of Peter M. Gideon, and many words of approval were spoken in regard to his services to the fruit interests of the Northwest. A committee was appointed to consider the matter of a suitable memorial to the departed horticulturist.

At the annual election of officers but two changes were made in the old list, O. M. Lord being elected treasurer, and Mr. Vincent Bailey, of St. Anthony Park, vice-president to succeed R. S. Mackintosh.

In the discussion of "Exhibiting Fruit at the State Fair," which was presented by Prof. Green from the judge's standpoint, and by Clarence Wedge from the exhibitor's standpoint, much interest was aroused, and many things were urged both pro and con, in regard to strict rules, sweepstake exhibits, etc., and it is to be hoped that it may result in still better displays at the state fair, where so many learn for the first time apparently that there is such a thing as raising fruit in Minnesota.

The ladies were also present and in the regular meetings and in the session of the Ladies' Auxiliary showed their interest in the work.

Promptly on time, Ex-President J. M. Underwood, acting as president pro tem, pronounced the winter meeting adjourned "sine die," with all the items on the program completed, and the members departed homeward well repaid for their journey.

F. H. NUTTER.

AWARD OF PREMIUMS.

At the Winter Meeting of 1899 of the Minnesota State Horticultural Society.

APPLES KEPT IN COLD STORAGE.

Article.	Exhibitor.	Premium.	Amount.
Patten's Greening	Ditus Day, Farmington	First	$0.50
Malinda	"	Second	.25
Fameuse	"	First	.50
Tallman Sweet	"	Second	.25
Martha	"	First	.50
Lyman's Prolific	H. M. Lyman, Excelsior	First	.50
Tallman Sweet	Clarence Wedge, Albert Lea	First	.50
Repka Malenka	"	First	.50
Malinda	"	First	.50
Ben Davis	"	First	.50
Peerless	"	Second	.25
Utter	"	First	.50
Anisim	J. S. Harris, La Crescent	Third	2.00
McMahon White	"	First	.50
Wolf River	"	First	.50
Ostrekoff	"	First	.50
Gideon No. 6	"	First	.50
Kaump	"	First	.50
Gilbert	"	First	.50
Minnesota	"	Second	.25
Okabena	F. I. Peterson, Waconia	First	.50
Blushed Calville	"	First	.50
Transcendent	Gust Johnson, Excelsior	First	.50
Duchess	J. A. Howard, Hammond	Second	.25
Wealthy	"	First	.50
Longfield	"	Second	.25

Article.	Exhibitor.	Premium.	Amount.
Cross	J. A. Howard, Hammond	Second	.25
Rollin's Prolific	"	First	.50
Lowland Raspberry	"	Second	.25
Kaump	"	Second	.25
Sandy Glass	"	First	.50
Peter	"	First	.50
Whitney	"	Second	.25
Minnesota	"	First	.50
Hyslop	"	First	.50
Briar Sweet	"	Second	.25
Pride of Minneapolis	"	Second	.25
Powers	"	First	.50
Sweet Russet	"	Second	.25
Lyman's Prolific	"	Second	.25
Pride of Minneapolis	Thos. Redpath, Long Lake	First	.50
Collection, 10 Varieties	Jewell Nursery Co., Lake City	First	6.00
Rollin's Prolific	"	Second	.25
Fameuse	"	Second	.25
Anisim	"	First	.50
Phoebe	"	First	.50
Lowland Raspberry	"	First	.50
Harding	"	First	.50
Peach	"	First	.50
Wolf River	"	First	.50
Martha	"	Second	.25
Tonka	"	First	.50
Virginia	"	Second	.25
Judson	"	First	.50
Tama	"	First	.50
Haas	"	First	.50
Walbridge	"	First	.50
Hibernal	"	First	.50
Okabena	"	Second	.25
Christmas	"	First	.50
Rollin's Pippin	"	First	.50
Blushed Calville	"	Second	.25
Charlamoff	"	Second	.25
Utter	J. S. Harris, La Crescent	Second	.25
Ben Davis	"	Second	.25
Harding	J. A. Howard, Hammond	Second	.25
Virginia	H. H. Pond, Bloomington	First	.50
Dartt	W. L. Parker, Farmington	First	.50
Florence	"	First	.50
Charlamoff	"	First	.50
Gideon No. 6	"	Second	.25
Wolf River	"	Second	.25
Haas	"	Second	.25
Anisim	"	Second	.25
Ostrekoff	"	Second	.25
Antonovka	"	Second	.25
McMahon	"	Second	.25
Yellow Sweet	"	First	.50
Judson	"	Second	.25
Cross 413	"	First	.50
Whitney	"	First	.50
Transcendent	"	Second	.25
Peach	"	Second	.25
Patten's Greening	"	Second	.25
Early Strawberry	"	First	.50
Hibernal	"	Second	.25
Duchess	"	First	.50
Hyslop	"	Second	.25
Tonka	"	Second	.25

Article.	Exhibitor.	Premium.	Amount.
Briar Sweet	W. L. Parker, Farmington	First	.50
Longfield	"	First	.50
Elgin Beauty	J. A. Howard, Hammond	Second	.25
Giant Swaar	"	First	.50
Peerless	Jewell Nursery Co., Lake City	First	.50
Collection	W. L. Parker, Farmington	Second	4.00

J. P. ANDREWS, Judge.

APPLES NOT KEPT IN COLD STORAGE.

Hibernal	W. L. Parker, Farmington	First	.75
Hyslop	H. H. S. Rowell, Minneapolis	First	.75
Tallman Sweet	Wm. Oxford, Freeburg	First	.75
Golden Russet	"	First	.75
Ben Davis	"	First	.75
Hyslop	"	Second	.50
Ostrekoff	J. S. Harris, La Crescent	First	.75
Fameuse	Ditus Day, Farmington	First	.75
Malinda	"	First	.75
Wealthy	Thos. Redpath, Long Lake	Second	.50
Seedling	S. A. Alling, Homer	First	3.00
Peck of Wealthy	Jewell Nursery Co., Lake City	Second	2.00
Peerless	Thos. Redpath, Long Lake	First	.75
Wealthy	J. A. Howard, Hammond	First	.75
Ben Davis	"	Second	.50
Peck of Wealthy	"	First	3.00
Haas	Jewell Nursery Co., Lake City	Second	.50
Malinda	"	Second	.50
Minnesota	"	First	.75
Seedling	"	Second	2.00
Anisim	W. L. Parker, Farmington	First	.75
Patten's Greening	"	First	.75
Cross 413	"	First	.75
Haas	"	First	.75
Minnesota	"	Second	.50

CLARENCE WEDGE, Judge.

GRAPES.

Agawam	Gust Johnson, Excelsior	Second	.50
Delaware	"	Second	.50
Brighton	"	Second	.50
Duchess	"	First	.75
Pocklington	"	First	.75
Iona	"	First	.75
Moore's Diamond	"	First	.75
Lindley	H. L. Crane, Excelsior	Second	.50
Roger's No. 9	"	First	.75
Delaware	"	First	.75
Concord	"	First	.75
Eumelan	"	First	.75
Moore's Early	"	First	.75
Collection	"	First	3.00
Agawam	J. R. Cummins, Eden Prairie	First	.75
Concord	"	Second	.50
Lindley	"	First	.75
Worden	"	First	.75
Rogers No.	"	First	.75
Brighton	"	First	.75

J. S. HARRIS, Judge.

FLOWERS.

Collection of Plants	E. Nagel & Co., Minneapolis	First	5.00
Cut Roses	"	First	2.00
Cut Carnations	"	First	2.00
Table Bouquet	"	First	2.00

MRS. L. E. P. SPRAGUE, Judge.

HONEY.

Comb Honey	H. L. F. Witte, Minneapolis	First	5.00
Extracted Honey	"	First	3.00
Extracted Honey	F. Moeser, St. Louis Park	Second	2.00
Comb Honey	"	Second	3.00

EUGENE SECOR, Judge.

PRESIDENT'S ANNUAL ADDRESS.

W. W. PENDERGAST, HUTCHINSON.

This morning is the time for the president's annual address. I came without any prepared address, as I thought the program would be so crowded there would be no time whatever, and so I told several members. They answered that there would be a committee appointed on the president's address, and there must be something to report on. They said it was my duty; they said they would call in the militia, and that made me feel a little afraid. If it is my duty so to do, I will try to say a few words that may be productive of some good.

I take this hour because there are so many to come on at this time that should be here, but who are absent. We also have a little difficulty in opening the meeting and getting started in the morning, and I will put that in as a part of my address, that we must be a little more prompt in beginning; we are too apt to begin late and then hang on at the other end. We do not want to be like Davy Crockett's dog. He said: "He is a good dog and has a great many good points. He will run well and bark well and hold on well until it comes to the very place where I want him to hold on the longest and get the hardest grip, then he will let go and turn around and bark at me." (Laughter.) We are not quite like that; we do not start off quite as promptly as we should in the morning, but we have good staying qualities.

During this past year I have had opportunity to become more intimately acquainted with the members of this great and growing organization than ever before, and I am more and more impressed by the utter self-abnegation of most of the people who belong to this society. We are disinterested, we simply want to make this state and the whole Northwest a more desirable place in which to live, and we are doing right, my friends, in not undertaking to do too much at a time. You all remember the story of Jack the Giant Killer, how when the old giant, Bloody Man, got hold of him and told him he was going to spit him and roast him and have him for supper unless Jack did everything the giant did, Jack began to tremble; he was now in the giant's power. The giant, among other things, got him to go out in his grove and set him to pulling up trees, or thought he had set him to do it. He took hold of one himself and pulled it up by the roots and threw it away, and then he took another. After awhile he began to look around for Jack, and casting his eyes to one of the nearest trees he found him tying the tops together. He called to him and said, "Come down here and go to pulling up the trees, or I shall have you for supper, sure as the world." "Wait a minute," said Jack, "till I get the tops tied together." "Why are you tying the tops together?" asked the giant. Said Jack, "When I begin to pull I am going to pull an acre at a time." A great many people make a mistake in that they are going to pull an acre at a time. The best way is to take one thing at a time and work at that until we have accomplished the desired result, and that is just what we have been doing all these years. I say we, because I am glad to count myself among the number, although I cannot go back as far as some of these graybeards I see before me, but I have tried to contribute a little part toward the grand result that is sure to follow. One thing at a time. Let others take an acre at a time, but let us take one thing at a time, and let us attend strictly to our knitting. We will try to make the Northwest the home of the apple or the pear, or of small fruits which we know we can grow and make at home right here in our midst, and by their help add to the enjoyment of every man, woman and child in the entire state. And let

us not get on the side track! Let us not turn either to the right or to the left, but let us pursue the even tenor of our way till we can see that all these things have been brought about, and our work is practically at an end, so far as our duty is concerned.

The improvement of the fruits of this state and the Northwest will never cease. They will keep on improving as long as there are other men like those in this society who are to follow us; but we shall have the satisfaction of feeling that we have contributed our quota, that we have done our part as well as in us lay to bring about this grand result.

We must look after the causes of the troubles that beset our pathway. It will never be productive of much good to simply work on a theory. We say we will try this way and see what we get, then we will try that way. It is like the boys used to work their arithmetic lesson. They said, "We will multiply by this number, and if that does not give the result we will divide, and if that does not give the answer we will add one to the other—until we get the required answer." How much better off are we if we follow after everything? We shall make no advancement whatever. We must look to the causes that obstruct our pathway, and such a lecture with the demonstration as was given us by Prof. MacMillan yesterday morning gives us an idea of what is before us. Get at the underlying principles; see what the cause of the blight is, see what produces the summer scald, see why it is that those apple trees root-kill; and in all these matters we should work along in harmony with other states, neighboring states that are having the same troubles, the same difficulties, the same obstacles in their pathway that we have. After we have got the thing established; after we have found out what the trouble is there is no need of spending more time over that; then let us take some other branch. It would be a good plan for us to say to North Dakota and South Dakota and to Wisconsin: You make your experiments along this line or that line. Not saying it in any dictatorial way, but say to them that we want to cover certain ground, and that they should take this line, and we will take that line, and North Dakota another and South Dakota another, and work out those lessons, so that one will not go over the same ground the others have gone over. Now we see how much is gained by this experiment station in having its little stations scattered around over the state, where the different soils are represented, and the people at those stations do the experimenting that it would be impossible for each farmer to do for himself. So as horticulturists we have our little stations scattered through this state; they are helping us out, and North Dakota, South Dakota, Iowa and Wisconsin can help us out, and we can help them a great deal more than each one can help himself if each one is working without any attention being paid to these others that are working on these same great problems.

One of the things we want is a winter apple. We have got plenty of fall apples and summer apples that are doing well. I think there are a large number that can be depended on in the future for a crop year after year. There will be what Brother Dartt calls a "test winter" by and by that will thin this number out, but after thinning there will be enough left of that kind. Now we want to turn our attention to the winter apple. I am one of those fellows who believes that much can be done in the way of improving by cultivating those varieties that we already have. The potato may be cultivated (no particular variety of potato, the Chenango, for instance), year after year, through generation after generation, and when you get through with it it is the old Chenango potato, with all its diseases that have

been adherent to it during all those years of cultivation. The advances that are made, as the advance in wheat cultivation, are made by crossing, and then when we have a cross that promises better than anything we have had yet make the most of that. In crosses of this kind there will be sports. You go into a wheat field and once in a while you will see a stalk six or eight inches higher than the rest; the heads will be longer and the straw will be stiffer. Through such sports some of the best varieties of wheat have been established. A few heads were sent me from Oregon that had been cultivated in this way. There was only a single stalk to begin with in a large field, and that was carefully gathered and planted, and the product was planted again and again, so that that variety has crowded out all the old ones that they were raising in that vicinity. So it is with the strawberry, our best varieties coming from seedlings and perhaps sports at that. We have got to keep digging away in this with our seedlings, with our crosses, with foreign varieties, in every way that we possibly can, and by and by we will find something that is a little better than what we have now, and just as soon as we catch that we have got just what we have been striving for. If you have anything of value send it right to these men who are interested as you and I are in the betterment of our fruit products, and they will see to it that that seed is never lost.

I have taken up more time than I expected to take, but in closing I want to say that it seems to me there are no people belonging to any other organization in this state or the Northwest that are so disinterestedly trying to do something that will redound to the credit of the state and to the happiness of the individual as is done in the very course we are pursuing, and all the mistakes of the past must be made to play into the hands of the future. When we have gone wrong we must try not only hereafter to avoid that mistake, but we must see to it that we do not make other similar ones. We must see how easy it is to go wrong. An old man said to me at one time in Massachusetts: "There is a straight and right path before every one that he must follow. It is his only true course, and just as soon as he steps aside from that path out into the tangled brush and thickets, wandering lost down in the tangle of the forest and in the miasma of the swamps, where the serpents hiss and vipers crawl—just as soon as he gets out of the path he is on the devil's ground, and the devil has got his traps set all over it, and the erring victim does not know how soon he will put his foot in a trap and get caught."

REPORT OF COMMITTEE ON PRESIDENT'S ANNUAL ADDRESS.

Your committee appointed to consider the address of the president congratulate the society on his able and comprehensive address and recommend that it be given an early publication in the Horticulturist. It also recommends that a committee consisting of the president, secretary and Professor S. B. Green be appointed to carry out the suggestion of the president that so far as possible the horticultural societies of Wisconsin, Minnesota and the two Dakotas co-operate and do experimental work along different lines to avoid waste of effort and duplication of experiments, the duty of the committee being to investigate the extent to which such co-operation is possible, and report at the next summer meeting.

A. G. WILCOX,
O. M. LORD,
W. H. EDDY,
Committee.

ANNUAL REPORT OF EXECUTIVE BOARD.

WYMAN ELLIOT, CHAIRMAN.

We have held four executive sessions the past year, two at the time of the annual meeting, one at the summer meeting, and one at the state fair. The rest of the business of the year has been managed through correspondence.

The principal business of importance has been preparing rules and regulations governing the $1,000 premium offered by this society for a seedling apple fulfilling all the conditions named. This, it is hoped, will be far-reaching in its results in the development of pomology for our state. It is hoped this inducement will give a great impetus to the planting of choice apple seeds all over the Northwest; and it is very much desired by the members of your executive board that this premium offered shall be the means of giving us not only one apple that is hardy and possessing all the other qualifications stipulated, but that many others of equal merit will be produced to help swell the list of apples that are worthy of cultivation.

The secretary's office and library room are fast becoming over-crowded and provision must soon be made to secure a larger room.

Suggestions have been made that some measures should be adopted by our society whereby the lady friends of the horticultural fraternity of our state should become more closely interested in our work, and it is hoped these suggestions will be discussed and some action taken at this meeting.

There are many talented women who are both capable and willing to prepare valuable papers and participate in our discussions when once their services have been enlisted, and as progressive horticulturists we should seek their aid and encourage their efforts along the line of better home making and adornment. The raising of choice fruits, vegetables and flowers, unless utilized by some one with acquired taste in preparing them in an inviting and appetizing manner, does not reach the best results. The horticulturist of the present day, with work always pressing him forward to greater exertions, needs the assistance and refinement of the gentler sex to tone down his rough exterior and make home more pleasant and living more economical. We say, God speed the women's auxiliary societies all over our state and nation and may their influence be a leavening power in forming progressive ideas and sentiments with every true horticulturist.

SECRETARY'S ANNUAL REPORT, 1899.

A. W. LATHAM, MINNEAPOLIS.

The year just closing has been one of interest in the work of the society, at least as seen from the standpoint of the secretary's office. The legacy left it from the year before was not altogether an encouraging one. With no printing appropriation and a moral obligation amounting to some thousands of dollars due the printers, covering the work of the two previous years in the publication of our magazines and reports, and just a dash of uncertainty as to what the incoming legislature might see fit to do about meeting this obligation and providing the necessary means for continuing the work of the society, there was occasion for very serious deliberation. It was an assured relief when this crisis in our history was safely passed, thanks to the persistent and untiring efforts of our president, of our fellow member, A. K. Bush, fortunately at this time a member also of the legisla-

ture, of the legislative committee, and of scores of other members and staunch friends of the society, who were "instant in season and out of season" till the desired end was accomplished. The act as passed by the legislature was printed in the May number of our monthly and need not be quoted here. It did not give us all we desired, among other things an opportunity to enlarge our work in a certain field, but it does place our printing on a safe and permanent basis to the same amount, quantity and quality as for some years previous, and it provided for the payment of the arrearages due the printers, who had so willingly carried the work over the interim.

Unfortunately, the delay attending the passage of this legislation till midspring made a similar delay in the binding and issuance of the last report, and the further fact that the secretary's spare time was occupied with matters connected with this unusual work had something to do, no doubt, with there being no increase of the membership during the current year.

At the close of the society year 1899, the list of annual members stands at 691. A good many names will still be added to this list, judging by the experience of previous years.

The roll of life members has received a much larger number of accessions in 1899 than in any previous year, fourteen names having been added to the list. As this is a list we are especially anxious to see grow, and it is desirable you should know what new fellow members for life have come to you lately, I append here the list:

J. S. Jerabek, Silver Lake; J. L. Hartwell, Dixon, Ill.; J. C. Kramer, La Crescent; Andrew A. Nelson, Jr., Atwater; E. M. Sherman, Charles City, Ia.; T. A. Hoverstad, Crookston; Thos. C. Hawley, Lake Park; O. W. Hagen, Sleepy Eye; Hans Mo, Sleepy Eye; Warren H. Manning, Boston, Mass.; A. W. Trow, Glenville; J. L. Adams, Glenwood; R. M. Dartt, Owatonna; E. W. Randall, Hamline.

As far as my record shows, only two names have been dropped from this roll by death during the past year, viz., those of Peter M. Gideon, of Excelsior, Minn., and J. C. Plumb, of Milton, Wis.

The full list of life members will be found in the report of the society for 1899. It now numbers seventy-three.

In this connection it may be noted that the certificates for life members so long in contemplation were finished and sent out to all life members during the past summer. It is a handsome lithograph and, suitably framed, is fitted to adorn the walls of any office or home. Any who are contemplating a life union with this honorable society and would like to see how this relationship is indicated can see a copy of the certificate hanging in the secretary's office. For sixty cents any aspirant for this honor can have a copy of this certificate framed in a similar way, provided always a previous fee of $10.00 has been paid to the secretary.

The life roll of our society should receive special attention. It is conceded that our annual roll is very much larger than that of any other similar association in this country, and the aggregate roll is also much larger, but of the life roll this cannot be said. There are a good many members on our annual list who have been paying annual fees long enough to have amounted to the life fee, and some very much more. All such, and every new member who conceives a lively interest in the various subjects connected with Minnesota horticulture, should make haste to place their names in this permanent roll. It will be a wholesome move not only for the member, but especially for the society, in whose work they will then have an abiding inter-

est. For the convenience of those who cannot spare the whole amount at one time, two annual payments of $5.00 each have been arranged. The fact should not be overlooked that as a life member you will receive a file of our back reports, which is in itself quite a library, as we are now issuing volume number twenty-seven. Fifty of the members in attendance at this meeting should square themselves with the secretary and have their names placed in this roll during the progress of this meeting. If you have already paid the annual fee for this year the amount can be deducted from the first annual payment, leaving only $4.00 more to be paid. Let us get to the front in this line also.

A few changes have been made the past year in the equipment of the secretary's office, mainly in the way of additions. Of these none is so highly prized as a framed photograph of the late Peter M. Gideon, presented to the society by Mr. Wyman Elliott. Within the writer's recollection this picture has been hung on the walls at our annual meetings. It is an excellent likeness of him as he appeared twenty years ago when in the fullness of success in his work.

Next in interest to this is a cabinet of wax models of twenty-six varieties of apples grown in our state. It is a valuable collection and should be supplemented by a similar one of grapes and other fruits doing well with us.

Seven substantial chairs have lately been added to the office furniture, made advisable by the increasing solidity of the office corps of the society. The older incumbents are still there, and visitors are cautioned to make careful selection proportionate to the bulk to be deposited thereon.

The executive board a year ago authorized the secretary to get a safe and book cases with glazed doors for the whole library, but careful computation showed the impossibility of accommodating the materials already accumulated in receptacles that occupied more room than the present arrangements. So these improvements were reluctantly postponed till it seems advisable to move the office into larger and, necessarily, more expensive quarters.

No feature of the work of the office during the past year is of greater interest and, we hope, promises more for the pomology of the state than that connected with the award of $1,000.00 offered by this society for a certain ideal winter apple. The regulations pertaining to this award were finally agreed upon and the permanent awarding committee appointed by the board in September. Copies were at once sent to some twenty-five applicants and very soon after to all the agricultural and horticultural papers of this country and Canada, something over 150. The letters coming in indicate that these journals gave wide notice of this offer, and a considerable number of informal applications are being made as a result, most of them containing a description of a seedling apple which seems to be about what we need. There are evidently a good many valuable seedlings the nurserymen have not yet got hold of. The chairman of the awarding committee will present fuller report on this subject.

Amongst other pleasant services the secretary had the opportunity early in the year of aiding the work of the Women's Auxiliary by sending out some thousands of a circular setting forth the purposes of the organization and containing also much other good practical literature along the line of their work.

In connection with the Farmers' Institute, as in former years, the lecturer on horticulture in the corps has distributed the surplus magazines from this

office and large quantities of a little folder containing our fruit list and a description of the organization and purposes of the society. Most of you have probably seen this folder and have been asked to hand them to your neighbors, and you will probably have further opportunities to do good missionary work along this line. Mr. O. M. Lord, who represented our work in the institute the past year, has shown himself, as ever, a strong helper for our association, placing our literature in good hands on every occasion and sending a good many additions to our membership roll.

The intimate relation of this office to the horticultural department of our state fair makes a brief reference to it excusable. Many of you attended the last fair and know the outcome in our department, one which, under the unusually unfavorable circumstances, may be considered creditable jointly to the management of the fair and our association. It is, without doubt, the strength and vigor of this organization which lies behind whatever success has come to this department. A pertinent question is "what are you doing personally to help this object?" The bulk of the exhibit is made by a few of the older members, who with advancing years are beginning to feel the weight of the burden and will soon be looking for others to take their places. Each of you is appealed to to lend a hand to help forward this very important part of the work of this society. Bring what fruit you have to the next fair, and if it is not enough in quantity so that, considering the other advantages of your presence there, you can afford to come, then send it to the superintendent, not forgetting to make the proper entries, and any premiums your fruit takes will be sent you. In this way you will soon become interested in the fair and acquainted with its methods. This is a practical way of helping along the work, and, as you will soon find, with much profit of some sort to yourself.

One department of our monthly could be developed with advantage to our members, and that is the one denominated "Our Corner." This is intended to contain the words of the membership. Short communications from you reciting any items of interest or value ought easily to fill a page or two in each number. Would you like to support such a department? It is for you to say.

FINANCIAL STATEMENT.

RECEIPTS.

Balance from 1898	$425.25
Hennepin County Savings Bank	500.00
Books sold	11.58
Plates sold	4.90
Advertisements	97.50
Minnesota State Fair, postage and stationery	8.00
Life membership fees	75.00
Annual membership fees for 1898	16.00
Annual membership fees for 1899	622.00
Annual membership fees for 1900	95.00
Sundries	.54
Order on the treasurer	1,116.49
Order on the treasurer	336.66
Total	$3,308.92

EXPENDITURES.

Postage	$151.68
Express	94.93
Stationery and printing	184.40
Office supplies	1.45
Photographs	3.85
Reporting Meetings	99.10
Telegrams	5.43
Gas in office	3.28
Insurance	6.40
Assistance in office	44.15
Expenses of executive board	56.90
Sundry expenses of annual meeting, 1898	62.17
Sundry expenses of annual meeting, 1899	15.85
Expenses of delegates sent abroad	29.67
Expenses of delegates in attendance at annual meeting, 1898	55.43
Assistant librarian	11.00
Expenses committee on nomenclature	7.95
Engravings	38.34
Deposited in Hennepin County Savings Bank	425.25
Wax models and case	54.10
Books for library	163.70
Books for premiums	57.15
Office rent	144.00
Directing and mailing magazines during year	18.00
Railroad tickets to secure reduced rates	36.72
Discounts on annual members	96.25
Sundries	11.29
Paid to the treasurer, June, 1899	1,097.83
Paid to the treasurer, December, 1899	332.65
Total	$3,308.92
Amount on hand in Hennepin County Savings Bank	$679.95

The writer cannot let this opportunity pass to thank the officers and members of the society for the ready and earnest co-operation on their part which makes the duties of the secretary so continuously an agreeable one. With such aid and encouragement there is scant excuse for not attaining results. It is this heartiness with which the units of this organization take hold together that has given it such a reputation for strength and service in our state and, in a measure, throughout the country. We shall continue, no doubt, to deserve this in the purposeful acceptance of whatever new responsibilities the progress of our work may bring to us. In union such as ours lies a force certain to achieve results.

TREASURER'S ANNUAL REPORT FOR 1899.

C. W. SAMPSON, TREASURER.

1899.	RECEIPTS.	
	To balance from 1898	$320.98
Feb'y 11.	State Treasurer, semi-annual allowance	750.00
June 21.	Secretary A. W. Latham, annual dues, etc.	1,097.83
Sept. 12.	State Treasurer, part of semi-annual allowance	500.00
Dec. 4.	State Treasurer, semi-annual allowance	250.00
		$2,918.81

1898		DISBURSEMENTS.	
Dec. 5.	Order No. 66.	Expenses Secretary's office, June 7, 1898, to date . . .	$422.47
1899.	" 67.	Secretary's Salary, first quarter, 1899	200.00
	" 68.	Secretary's Salary, second quarter, 1899.	200.00
	" 69.	Premiums at annual meeting, 1898.	132.50
	" 70.	Expenses Secretary's Office Dec. 7, 1898, to June 2, '99	1,116.49
	" 71.	Salary of President for 1899	25.00
	" 72.	Secretary's Salary, third quarter, 1899.	200.00
	" 73.	Secretary's Salary for September, 1899	66.66
	" 74.	Premiums at summer meeting, 1899	99.25
	" 75.	Salary of Treasurer, 1899.	25.00
	" 76.	Secretary's Salary November and December, 1899 . .	133.34
Dec. 4.	Balance on hand.		298.10
			$2,918.81

Examined and approved.

WYMAN ELLIOT,
Chairman Executive Board.

LIBRARIAN'S ANNUAL REPORT.

A. W. LATHAM.

During the year 1899 there have been 180 books added to the society library, of which number sixty-two were purchased, twenty-five were periodicals bound up, and the balance were the reports of other societies, coming to us largely in the way of exchanges. If the experiment station bulletins had been bound, the number would have been very much increased, but so far, instead of binding, they are being put into pasteboard receptacles for further disposal.

A partial list of the books accumulated during the year was published in the report of 1898 and will be found on page 194. Those received since that date will be published a little later.

There is a valuable reserve of our reports in the attic of Pillsbury Hall, State University. On account of the inconvenience of reaching them there the exact amount is not known. It is hoped that before long more commodious accommodations can be found for them and an accurate accounting made. In the meantime they are being safely cared for by the assistant librarian, Mr. E. A. Cuzner.

REPORT OF LEGISLATIVE COMMITTEE.

WYMAN ELLIOT, CHAIRMAN.

Your committee feel gratified to know that they have been able to assist so much during the last session of the legislature in procuring the passage of some measures that were very essential to the progress of this society.

1. The deficiency for printing our reports and the Horticulturists for 1898 and 1899 was provided for by an appropriation of $2,500 for each year.

2. An annual appropriation of $2,000 was secured for printing reports and the Horticulturists in the future.

3. The assistance we were able to render the bill for enlargement of the work in forestry.

4. The co-operation of our committee and members in helping procure the appropriation for the new horticultural building at the State Experiment Station.

On the other hand we are very sorry that we could not have brought enough influence to bear to cause the passage of some measures that in our opinion were very essential to the success of horticulture. There was the bill for regulating the sale of nursery stock, that should have received more hearty support from all the members of this society. This measure is of so much importance that it should be brought up again at our next meeting of the legislature and a strong committee be appointed to secure the passage of a law that will prevent the wholesale swindling of the farmers and amateur horticulturists in our state, and put our own home nurserymen on an equality with outside nurserymen in the sale of nursery stock. The states around us have laws that regulate the sale and transplantation of nursery stock. Why should we not have the same or similar regulations?

In Memoriam.

PETER M. GIDEON,

EXCELSIOR, MINNESOTA.

DIED OCTOBER 27, 1899, AGED 81 YEARS.

The death of Peter M. Gideon, originator of the Wealthy apple, and best known horticulturist in the Northwest, occurred on Friday morning, Oct. 27, 1899, after an illness of several months. The last four weeks he was confined to the bed, upon which bed he died, at the advanced age of 81.

Mr. Gideon was born in Champaign county, Ohio, on Feb. 9, 1818. He began the study of horticulture at the age of seven years by planting peach seeds, and had been engaged in growing seedlings ever since up to the time of his death. He resided in Ohio until 1841, when he removed to Clinton, Ill., and in 1853 came to Lake Minnetonka, Minn. His first experiments there consisted in planting thirty varieties of apple trees, a collection of pear, plum and cherry trees, besides a bushel of apple seeds and a peck of peach seeds. He kept this up, adding more annually for nine years. At the end of ten years, the rigorous Minnesota winters had killed every tree except one seedling crab. The labor and money of all these years was lost to him, and to many others who followed in his footsteps.

At this time Mr. Gideon found himself with only eight dollars in his pocket, a large family, one cow and a few chickens, with the long winter months ahead. However, he did not give up in despair, but sent the eight dollars to Bangor, Me., for seeds and scions, instead of buying clothing. For the latter he substituted two cast off vests, sewed them together, cut the legs off an old worn pair of trousers and sewed them on the vest, which did duty as a pair of sleeves. By re-enforcing the old patches and adding a little here and there, he succeeded in building himself a winter suit that lasted six months, "more odd than ornamental." Yet that antiquated garment was the means of adding millions to horticultural wealth in the cold Northwest.

From these seeds came the Wealthy apple, which was named in honor of Mr. Gideon's wife, whose maiden name was Wealthy Hall. In crossing the common apple with the cherry crab, he achieved marvelous results in producing hardy apple trees adapted to this cold northern climate.

In 1878, when the state established an experimental fruit farm, he was made superintendent and continued in that capacity for several years.

He left a large amount of unfinished experiment work in the shape of apple seedlings, trees of all sizes, from that of one year's growth to the fully matured tree. It is hoped that some suitable person may take up this work and carry it on to a finality, such a one as Mr. Gideon dreamed of and labored for unsparingly.

Five children, two daughters and three sons, survive Mr. Gideon, his wife having died a number of years since.

His daughter, Mrs. Florence Gideon Webster, of Eveleth, Minn., in writing of him, says:

"You all know the history of those early struggles, and I presume you know the task he set himself in later life—to produce a long keeping apple, of good quality, which should be hardy in the Northwest. His method of crossing and selecting you are familiar with. Many new seedlings were brought into bearing each year, some of the last of great promise. For many years none of the seedlings have been introduced or propagated in any way. Just how many mile stones he had passed no one can say, but he certainly felt he was far on the way.

"That which impresses one most was his devotion to his idea and his years of persistent toil, just as devoted and persistent without aid or encouragement as with it.

"I say, you know his work, yet no one who has not seen it in detail can realize the touch of the master hand. He lived close to Nature, and much that most of us have to glean from the study of many minds seemed revealed to him direct.

"He believed thoroughly in his work and in his ideas as a man meant to accomplish the best results. Fain, too, would he have had the world believe with him. But his ideas were as often blighted and frost bitten as his beloved trees.

"His religion, his philosophy and his politics, which cost him so many sympathizers, were as truly his own production as the Wealthy apple—just a suggestion of the seed planted. And he who looks may see that, as his work was directed to the production of a perfect apple, his ethics betray a striving for an universal ideal which few would have the boldness to conceive or the hopefulness to maintain. No man had ever more the courage of his convictions. He knew no compromise..

"The world he has left is richer for something it had not before he came—a worthy bequest. By his work know him. He has well earned the great privilege of having what follows this world's labor."

Mr. Gideon identified himself with the horticultural society at a very early day, his name appearing on the rolls first in 1868. In 1883, by a unanimous vote of the society, he was chosen an honorary life member.

During most of these years Mr. Gideon was a regular attendant at our meetings, where he always took a prominent part. His last visit with the society was at the annual meeting of 1898, the last one held prior to his death. His presence with us at that time was in the nature of an ovation and must have been gratifying to him as an expression of interest in him and loyalty to his work.

There has never been a time in the history of the society when Mr. Gideon's work was not fully appreciated by the society, and it was so to the end. When two years since misfortune overtook him in the burning of his home, it was looked upon as a privilege by the society to be able in his hour of trial to offer him some material assistance, which was of most value to him, no doubt, as showing the profound interest the society was taking in his work and their faith in him.

As an indefatigable, persistent worker, with the highest ideal, but with full faith in the possibility of its attainment, when shall we see his like again?

TRIBUTE TO PETER M. GIDEON.

PROF. S. B. GREEN, ST. ANTHONY PARK.

It is with some feelings that I am not able to do the subject full justice that I come before you this afternoon to speak on the works of Peter M. Gideon. I have thought it over with a great deal of care, and yet the ramifications of the work, such as he started, are so great that it is hard sometimes to draw the line as to what has been accomplished. It is hard to present, and I have no desire to overstate, but I wish to state the full amount of good that was done by Mr. Gideon, especially in horticultural work.

I was not acquainted with Mr. Gideon in a personal way to any great extent. I have been slightly acquainted with him during the twelve years I have been in Minnesota by occasional visits to his place, and know some of his work through outside parties, but I do not feel sufficiently acquainted to speak of his personal character.

As we think of Peter M. Gideon the name is almost synonymous in our minds with the Wealthy apple. While that was his masterpiece, yet in admiring that we should not lose sight of the fact that he did an immense amount of work, as every one does an immense amount of side work before the work is done that attracts attention. Mr. Gideon raised a very large number of seedlings before he got the Wealthy. The seedlings which he raised, to put it in his own words, were "adapted for this climate, hardy and suited for every month in the year." That is what he claimed, for every month in the year. He had "August," "September," "October," and I do not know how many named varieties which he sent out.

In thinking of Mr. Gideon's work we should think of him chiefly as a pioneer, as a man who had no precedent to go by, and looking at it from that point of view I think his work looks bigger than by comparing it with the work that is being done and has been done the last few years. He practically had no precedent to go by. He found on coming to this state that apples were not sufficiently hardy. He had a theory that by combining the qualities of the crab, its hardiness, etc., with the larger varieties of apples, of the Pyrus malus type, it would result in something valuable. His experiments in that line have been profitable in that they have given us the Wealthy apple, but, whatever the value of the Wealthy may be, he has gone so far in that subject of producing hardy varieties, he seems to have gone into the subject so thoroughly, that he has contributed quite a large amount of scientific interest in that he has shown what we can probably expect to get out of the union of the crab and apple, and in so doing he has opened a broad field. It seems to me in that way Mr. Gideon should be looked upon as having contributed something of essential value to science. In giving us the Wealthy apple he has brought the science down to a point so it is of commercial importance. So far as the trade value of the Wealthy apple is concerned I cannot take the time today to enlarge upon it; there are more to follow me. But today the Wealthy apple has a large number of advocates among intelligent, enterprising orchardists as the most profitable apple of all autumn varieties. In talking with Prof. Maynard, recently of Massachusetts Agricultural College, he told me that he regarded the Wealthy apple the best red fall apple for raising in the eastern states, and that he felt it was the thing to plant for the autumn trade.

Now, this work of Mr. Gideon in originating the Wealthy apple has given him a national reputation. His name is going down to posterity with that of Ephriam Bull, the originator of the Concord grape, and many in our own state whose names I do not see fit to mention in this connection. It seems to me such work as that well merits the consideration we give it today, and I cannot in this short time tell you in detail of the work he has done.

He has given us the Wealthy apple, the Gideon No. 6, the Martha crab, a variety regarded as the standard crab apple; he has done something of benefit to almost every man, woman and child in the colder sections of this country in producing these and other seedlings, of which I hope Mr. Elliott will be able to tell you more than I can. Aside from the large number of seedlings which he fruited, he sent out a large number of seedlings in 1889. I think it was ten thousand seedlings which he sent broadcast over the country, selling them at one dollar per hundred. At the time it was done I did not pay much attention to it; I was new to the state, and I do not think it impressed our horticulturists generally. I think it showed that he was a man of foresight, and that he was not selfish; anyway, the result has been to cover the tables at our state fair with such a lot of seedling apples that we can hardly find room for them. He sent out something like ten thousand seedlings all over this section, and the consequence has been to stimulate a good many people who never would have attempted apple growing.

The work of Mr. Gideon with those ten thousand seedlings is a living work today, and what he has started will be kept up until we have saved the good ones out. I had recently a most beautiful lot of apples sent me from Hanley Falls of those seedling apples.

That work is going to live, and it is possible that the apple which will be the coming winter apple for this state will come out of those seedlings which are now in the hands of private individuals—and it may be possible that variety has been overlooked and has already fruited.

Aside from the work Mr. Gideon did with apples, he was a general pomologist. He was specially interested in flowers. I visited him a year or two ago last summer with Mr. Wedge, and some children came there from one of the boarding houses on the lake and wanted some flowers, and he seemed to think an apology was necessary to them that he could not give them to them right away. People around the lake could go there and get flowers at any time. His little house, in that bunch of sugar maples, surrounded with a peach orchard and with his Peter and Wealthy apple trees, the space between the house and road covered with perennial flowering plants—his house would, perhaps, meet the ideal of the horticulturist as no other place would be likely to meet it, and it seems to me that gives us a side of the man's character that we could dwell upon, his love of flowers and putting himself out in giving them away.

If you will think of his character you will remember that he did not exhibit at our fairs for premiums, never. For a number of years he refused to exhibit at all, but remember that he never exhibited for a premium! And there was something grand to me about the old man sitting there last autumn behind the table on which he had his exhibit of seedling fruits. It seems to me there was something grand and fitting that that old man, whom we all knew was poor, should sit there among his fruit, too proud to exhibit it for a premium. That is the side of his character I like to think of the best.

It seems to me when we look into the life of Peter Gideon, what he has done for horticulture in Minnesota, the fact that he was pursuing that one line of experiment and followed it out so as to almost settle some scientific points, and in a general way added to the horticultural literature of this country, it seems to me we have much to honor in Mr. Gideon and have cause to feel proud that he was a son of Minnesota.

TRIBUTE TO PETER M. GIDEON.

J. M. UNDERWOOD, LAKE CITY.

In contemplating the death of Peter M. Gideon, we are bound to recognize the fact that a valuable life has ended its labors and that the cause of horticulture has lost a valiant leader. It seems fitting that we should pause in the hurrying rush of our busy lives and pay a tribute of respect and homage to one who has shown so much perseverance in meeting opposing forces, so much practical intuition in his methods, and who has attained such important results. His individual efforts are indeed ended; but does he not still live? Will he ever die? Is not the Wealthy apple tree that owes its origin to him a living part of him? Do not their bodies stand erect before us, even as he did; their graceful branches reach out to us in cheerful greeting, and the voice of their rustling leaves speak to us of him to whom they owe their origin. And so far as it is possible to conceive that he is a part of them, he will never cease to exist. From one ocean to the other, and even across the seas or wherever apples can be grown, the Wealthy apple tree will be planted. The large, highly colored fruit, with its thin skin, easily catches and retains the radiance of the sun, imparting to its veins, sometimes even to its delicate core, rays from the blushes of its cheek. Its rich, vinous, melting juices will ever tempt us to partake, and we shall readily pronounce it the best fruit that is grown.

This is but one of the valuable productions which our departed friend has left us. It is fitting and just that we recognize them at this time, and, if we can, it would be well to erect some more substantial monument to his memory than mere words.

I will propose that a committee of three be chosen to devise means for raising a fund of money to be given to the board of regents of the state university to be by them invested, and the interest thereof awarded as prizes for proficiency to some graduated student or students each year in the school of agriculture, and the prizes announced on the day of graduation. The proficiency of the student should be determined by the dean, the professor of the horticultural division in the school and the secretary of the state horticultural society. The recipient of the prize or prizes to prepare and read a paper before the state horticultural society at its annual meeting, which shall be along original lines of study, and the award should not be made entirely upon the quality of the paper, but studious work done by the student should at least be an equal factor.

We might erect a dead monument to him of suitable proportion in the cemetery, but would he not prefer a living, acting recognition of his services to us, even as he has left to us living testimonials of his love for horticulture? And I further propose that all present join me in partaking of a Wealthy apple to the memory of our departed friend.

TRIBUTE TO PETER M. GIDEON.

JOHN H. STEVENS, MINNEAPOLIS.

For over forty years Mr. Gideon was a friend of mine, so I knew him intimately. He may have had faults. Who has not? No one ever doubted his honesty. He had no superior, or an equal, as a horticulturist in the Northwest. He originated many new varieties of apples; some of them of great merit. Aside from the Wealthy, the Peter and the Gideon, he introduced other rare varieties.

His name will be handed down to posterity, even to the end of time for the benefit, the great benefit, he was to mankind in introducing luxuries which would rival that grown by Adam in the garden of Eden. A great man has fallen in the horticultural world.

TRIBUTE TO PETER M. GIDEON.

J. S. HARRIS, LA CRESCENT.

In the death of Peter M. Gideon, we have lost an earnest worker in the developing of a pomology suited to this Northwest. He was one of the few pioneers who could not be overcome or swerved from his purpose by failures, disasters or misfortunes. At a very early day he, having tested the leading varieties of American apples grown in the East and South, became satisfied that they would not be successful here, and immediately set about the work of creating a hardier race of apples from seed by the crossing of the Siberian species with the Pyrus malus and also by planting seed of the most northern grown fruit. The first fruit of this work was the Wealthy, from seed procured from Maine, which proved to be the beginning of success and a grand triumph over unfavorable conditions. Encouraged by this success he continued from this time on to devote his whole time and energy to experimental work, trying the production, of seedlings by crossing varieties and species. He has distributed thousands of these trees over our state for trial. Many of them are coming into bearing, and some of them producing fruit of excellent quality, and the trees seeming to possess a degree of hardiness that will make it possible to extend successful apple culture much farther north, and becoming valuable additions to our pomology.

His work had not been fully appreciated while he was with us, but he will be remembered and honored by future generations who reap the rewards of his labors as a great public benefactor.

TRIBUTE TO PETER M. GIDEON.

WYMAN ELLIOT, MINNEAPOLIS.

The mind that directed the hand in the early development of choice fruits for our state has gone hence, and today we met here to give a short resume of his work in horticulture.

Peter M. Gideon was born a true horticulturist. He commenced to plant seed at a very early age, having planted peach stones and transplanted the trees which bare fruit that he ate when he was only nine years of age, and from that time to his last declining years it was his chief calling and delight.

In 1853 or 1854 he came to this state, bringing seeds and fruit trees; of this first planting there is not one tree left. The question will be asked, why did he lose those trees? To my mind the answer is, southern seed and stock. It was too far a removal north and the conditions uncongenial here. Yet with all his losses he was not discouraged. Discouragement was not in his make up—he was not made of that kind of stuff. He was always hopeful of overcoming the adverse elements he had to contend with in his chosen work; once putting his hand to the plow he never turned back, but toiled on valiantly to the last.

In 1861 he procured common apple and cherry crab seed from Maine; these he planted, and he always thought the Wealthy apple tree came from the crab seed. At any rate, the thrifty growing seedling thus grown and destinued to become renowned with a world wide reputation developed spurs similar to the crab apple trees.

The first mention that is made in any reports of this new candidate for favor with orchardists was in a speech delivered by Col. J. H. Stevens before the legislature at the time of our annual winter meeting in 1870.

Mr. Gideon was an untiring, indefatigable worker in his chosen occupation, and there has never been a horticulturist in any state that has given more years of self-sacrificing, energetic, persistent effort for the production of an apple combining all the qualities worthy of propagation in this climate than our departed friend, Peter M. Gideon. His whole soul was enthused with the idea of being able to produce a long keeping, productive, hardy apple tree. It was his constant thought by day and in his dreams by night (sometimes interpreted as spirit manifestations by those of that manner of belief).

His hospitality towards existing horticulturists was always very cordial. We all shall miss his genial, smiling countenance and his brilliant expression of thought pertaining to his one great hobby, the growing of a long keeping hardy apple. He was always a close and warm friend, a very bitter and sarcastic enemy. Honest to the last degree of honor in all his dealings in business, there were few characters with more pronounced conscientious convictions. He was a man of extraordinary individuality, a persistent worker, undergoing any amount of work and self-sacrifice to accomplish the great ambition of his life. No man in this state can show a better record or has given longer continuous service in this one direction than he, and the state should erect a monument to his name, for the great service he has rendered in producing the Wealthy apple, thereby giving a great impulse to the fruit industry of our state.

We are constantly discovering new seedling apples that have had their origin through his efforts in planting seed; that have been crossed and recrossed by the best method (or what is at the present time considered so by our most scientific horticulturists) of natural or insect fertilization. And the end is not yet, for there are a great many seedling trees scattered all over this and adjoining states that have been distributed from his grounds that have not yet come into bearing, or become known to the members of our society. And today there may be on the Gideon farm the tree that will produce the very apple we all have been so long looking for. Some arrangement should be made with the heirs of his estate that the work he has inaugurated should be continued under the direction of some competent person or the direction of the state experiment station.

TRIBUTE TO PETER M. GIDEON.

A. J. PHILIPS, WEST SALEM, WIS.

I feel that no words that I can command can fully express my admiration for him and the great work he has accomplished. He was a man that I loved to honor, and a man that it was an honor to love and admire. No man of my acquaintance ever had to me a stronger, a more venerable and loving personalty than Peter M. Gideon. I never met and conversed with him, never planted a Wealthy tree or ate a Wealthy apple, never read his letters, so positive and full of interest, but I felt that everybody ought to love and admire him. I sat beside him for an hour and talked with him about his seedlings, at the last state fair, in September. I looked earnestly in his face then and felt as I do today when at this moment while writing I stop to gaze at his likeness, that there is something saintly, yes, heavenly, portrayed there, that is fitted for a place in the home beyond—in the house not made with hands, eternal and in the heavens.

The first of three visits I made at his home I found him attending a spiritual service a mile or two away. I entered the room and took a back seat while a lady was speaking of the home beyond, where all was peace and love. He sat in front of her seemingly drinking in every word she uttered. In a few moments he looked around and noticing me he at once came to me and said he would go with me to his home. But I said "No, you stay and hear it through; you are enjoying this too much to go with any one." He thanked me and returned to his seat. I often think of that incident. I did not feel that it was right to deprive the old man of the spiritual enjoyment he was having. Afterwards when walking home he said, "I suppose you do not believe in spiritualism?" I said, "I believe in any form of religion that men are sincere in that makes them kinder, more lovable, or better husbands, fathers or citizens."

This much for the man. Now a few words about his work. His untiring energy and perseverance gave us the Wealthy apple. If the apple is king, the Wealthy is the queen of the north. Its value no man can estimate. The Iowa Fruitman recently repeated what I once said. I never so realized the value of the work Mr. Gideon has done for the horticulture of the Northwest as I did at the Omaha Exposition, when I saw the beautiful Wealthy apples from ten different states. I promised to visit him at the time of the next meeting at Minneapolis in December, but he has gone to his rest, and the present and all future generations will enjoy the fruits of his labor. Peace to his ashes.

TRIBUTE TO PETER M. GIDEON.

J. T. GRIMES, MINNEAPOLIS.

I feel as if I were standing on hallowed ground, consecrated to the memory of one of our most distinguished horticulturists, Peter M. Gideon. I knew him well. He needs no introduction from me, for he is known to every horticulturist in all these northwestern states; if not personally, he is "known by his fruits" and will be still better known as the years pass by.

He was a man of peculiar ideas, one who could not be swayed by the opinion of others contrary to that of his own. In life he had a tenacity of purpose, which in all the years of that long spent life was centered in one particular object, that of originating a class of hardy apples suitable to the

climate in which he lived. Not one tree in a thousand of all the seedlings that he produced was considered of any value by him. No amount of discouragement ever seemed to change his purpose or in the least to affect his perseverance; he still continued to plant and plant and grow and test those seedlings with the full assurance that his efforts would eventually be crowned with success. How far he succeeded in his expectations we only know by the valuable list of hardy apples which he originated. The Wealthy apple, for instance, stands pre-eminent in hardiness, size, quality and beauty of finish, and, if he had done nothing more, this tree alone would stand as a monument to his memory.

To us he has left a rich inheritance in those fruits which he originated by his own hand and at his own time and expense, but like most public benefactors he died poor and almost neglected.

With him the fast horse was an abomination and the state fairs a curse with that appendage.

Mr. Gideon was a true horticulturist, ever ready to impart knowledge from his own experience with fidelity and honesty; warm in friendship, without guile.

There never was but one Peter M. Gideon, but his sun has set behind the closing gates of heaven, and we can only see the silver lining of the cloud that hides from view while darkness intervenes. With him it is not so. With him the day star of life has risen, floods of celestial light rush in to fill the space left vacant through the flight of time and man springs up immortal to assume the health and vigor of perpetual youth. For his sake alone, we could not for a moment wish it were not so.

Mr. Gideon may have had his faults, we have ours. Whatever those faults may have been, let them be buried in oblivion forever. We only know the tender cord which binds our fraternal family circle is broken. In the loss of our brother a bright horticultural light has been extinguished. He will toil with us no more, for he has laid aside life's wearisome burden at last, and we can only say fare thee well; and yet while we cherish his memory, let us also try to emulate his virtues, his integrity, his honor.

TRIBUTE TO PETER M. GIDEON.

HON. S. M. OWEN, MINNEAPOLIS.

I should not, of course, say that I am gratified or pleased to be able to take part in this commemorative ceremony to the dead, but there is a satisfaction, a melancholy one, to me in this particular ceremony, or on this particular occasion, because I find here a wide departure from the customary commemorative exercises, in that a subject has been chosen that, as a rule, does not receive any consideration either before or after death from the great public or the great mass of our people. We are given to honoring the memory of the man who accumulates a great fortune for himself, and we rarely, if ever, stop to ask the means by which it was accumulated. We often hear the memory of a man commemorated whose only distinction came from the fact that he had achieved high official position, and even then we do not stop to question much how the position was reached; if he got there that seems to be enough to inspire our affection and induce us to honor him.

We have some regard left also for the soldier, and it reaches a height in proportion to the amount of blood he has shed, but I doubt whether we

regard that man higher than we do the accumulator of wealth or position, yet we make more noise about it when we honor him. Usually when we have passed that class of men, we let others go off the plane of existence without much notice or attention, except such as they receive on the part of their immediate friends or families. But this is an occasion totally unlike others. We are here today to commemorate the memory of a man who was really a benefit to his race and to the clime in which he lived. The great fortune that has been accumulated by some man we honor may be dissipated; the great picture that made a painter famous may fade; a machine invented by some inventor whom we honor may become antiquated or superseded in a short time; but the man who produces a fruit, for instance, that will grow, that will flourish in a clime where else there would be no fruit, or where there was none before, he builds that which cannot be destroyed, which cannot be dissipated, which cannot be superseded, and hence he is a greater man in every respect. He is entitled to more of our consideration and our love than either of the others I have referred to—and it is the memory of such a man we are here to commemorate today.

I will not attempt to enumerate any of Mr. Gideon's achievements, which have already been spoken of by others. His name will be longest remembered in connection with the Wealthy apple. The Wealthy, named in honor of his wife, whose name was Wealthy. But the name has an infinitely broader signification than that, because it is really a mine of wealth on the farm, in the lives of children and grown people, and will be for all time to come.

We talk of building a monument to Mr. Gideon. I would be glad to see it, provided it could be kept from the seclusion of the cemetery, as has been suggested here. If it could be put out somewhere where the daily life of the people could come in contact with it, then I would be glad to see a suitable monument erected. I would be glad to see his marble or bronze bust in our new capitol of the state; I would be glad to see any token of distinction conferred upon him. But it matters not. Mr. Gideon has built a monument to himself. They will appear this year and disappear, but the next year they will come again and disappear, and so they will keep coming perennially. Monuments, of which we have a type here (indicating a table of Wealthy apples), scattered all over this land where it was said a few years ago that apples could not grow at all.

Two years ago, or less, I stood by the grave of Mr. Bull, the originator of the Concord grape, in the Concord cemetery in Old Concord. On the highest point of a pretty knoll, of what is known as Sleepy Hollow, in that cemetery, are the graves of Emerson and others, who have contributed to enrich the literature, not only of this land but of the world, and down a little way below that point I saw a native granite boulder. Set in that boulder is a little bronze tablet bearing this inscription: "Ephraim Wales Bull, Originator of the Concord Grape." That was all. And I thought, as I stood there, that that grave ought to be put up there on the pinnacle with Emerson and the rest of them. They, it is true, had written poetry, had given philosophy that was read and loved all over the world, but he was a co-worker with them, in that he produced a fruit that was not only grown all over the world, but was grown in places where such fruit never grew before, and from that vine came other varieties of grapes that will enrich the fruits of the world as much as those great writers did the literature of the world. Yet who outside of horticulturists themselves know anything

about Ephraim Wales Bull, or ever heard of him, in fact? I thought of this in connection with Mr. Gideon. They talked here about his eccentricities of character and manner, but let us forget them. He was as little responsible for those things as is the man who is born with a physical deformity. So had Mr. Bull his idiosyncrasies, he had his peculiarities, he had his unpleasant characteristics. The characters of the two men were much alike, and the fate of the two men much alike. Mr. Bull died a public charge, living in a home provided for old men without means, and was buried at the public cost. His grapevine, the original vine, stands in the garden with the little house in which he lived and where he worked. The old vine looks like an old man who has done his work in life. There it is, moss grown, rugged and gnarly. It has given up its scions by the thousand. There is little left, yet on the little that is left I saw clusters of grapes half matured, as though the old fellow intended to attend strictly to business and die with his boots on. I said to the people of that classic town, "You ought to be ashamed of yourselves in your neglect of that garden and that old vine. You should trim that garden, you should preserve that house and preserve that old vine as long as you can, and make it a point of attraction to this Mecca of yours to which so many people come every year. The same thing should be done with the surroundings and works of Peter M. Gideon. As one is entitled to great honor, so is the other, and as each is entitled to more honor than the getter of wealth, the painter of a great picture or the inventor of a new machine, so we should take upon ourselves this duty and see that we are not so neglectful of his works and surroundings as are those Concord people in regard to Mr. Bull, the originator of the Concord grape.

Now, my friends, in conclusion, let me ask you to do this, just for one solemn moment: Let me ask you to put away your prejudice, let me ask you to forget your creeds, and for a moment let us all believe in Mr. Gideon's religion. Let us believe that he still has a conscious existence; that he is with us today; that he is listening to what is said of him. Let us believe that, because it will not only give us a keener pleasure in what we are doing, but it will make us feel that he knows that the work he did is appreciated by the people, notwithstanding all the vicissitudes of his hard life. The man who would not push the little toad aside from his path was not the man to harbor a hate in his breast. Mr. Gideon has several times said unkind things of me. I have forgotten them. I paid no attention to them, because I knew Mr. Gideon. I felt I could read and understand him.

So I say, let us forget. Let us tell this departed spirit who stands here in our midst, listening to us now—I say, let us think it is so, let us believe it; and then let us send to him on the hither side of the grave where he now is a message, that we have forgotten everything that was unpleasant in his nature and character; that we remember only the true heart that was underneath it all; we remember his work; we are thankful that he lived, and we send him this message: Well done, good and faithful servant; you lived to a purpose; you made the world better for having lived in it, and we pardon you freely for everything you did or thought that did not seem to us just, kind and neighborly. All of your peculiarities, all of your idiosyncrasies, all of that rough exterior, are forgotten now, and we remember only the soul that was in it and the determination that was behind it to do something to benefit the people of this Northwest by contributing to and enlarging its family of fruits.

TRIBUTE TO PETER M. GIDEON.

W. W. PENDERGAST, HUTCHINSON.

The Northwest owes a debt to Peter M. Gideon, whose amount it is impossible to calculate. Thousands of farms named in this and adjoining states have been made richer and happier by his grand contributions to horticulture along the line of apple growing. In the prime of life—and that means many years ago—he formed his plans and entered upon the work of experimenting with a resolute will and determined purpose to succeed. His object was to produce and place before the people of this northern clime some varieties of fall and winter apples which should be of high quality and hardy enough to withstand our trying winters and the hot weather of our early spring. All previous attempts in this direction had resulted in failure. Minnesota seemed doomed to wheat, vegetable and cattle growing exclusively. But Mr. Gideon was not a man to be easily discouraged. He was not to be terrified or side-tracked by the mistakes or failures of others. "They might come and they might go," but he went right on till the "grim reaper" gathered him into the "harvest of death."

If the great end of life is to serve others and make their lot brighter by smoothing the asperities of life and increasing its comforts, if he who causes two blades of grass to grow where one grew before is a public benefactor, then Peter M. Gideon must have had the satisfaction of feeling that his life's work had been faithfully performed and that his self-imposed task was complete. Of course, there is much to be done by us who remain, but his mission was fulfilled, his purpose carried out, his life a success. Let us all, then, unite in giving him the full meed of praise for what he accomplished for us under the most adverse circumstances, working with an ardor that no scoffs could cool, a devotion that no obstacle could turn aside. Such men should be honored not for the good it will do them after they are dead, but as a recognition of merit, an incentive to others, especially to the young, to be as diligent and persevering as he, always following with unswerving zeal wherever duty points the way.

Mr. Gideon is dead, but his noble work will live after him. His memory will long be green in the hearts of men whose interests are bound up in the interests of the great Northwest.

The Wealthy, the Peter, the Gideon, the Martha and scores of other valuable apples which he originated and gave to the public without a thought of monopolizing the profits sure to accrue from their introduction, will add millions to the wealth of this country. Countless children yet to be, as they look admiringly upon the rosy fruit hanging from the bending boughs, glistening in the bright September sun, will bless the man who spent his life in making such a sight possible, and will place his name high up on the scroll of worthies who have passed away, as the particular one, who in spite of pain, poverty and disappointments enough to discourage weaker and less resolute men, yet struggled on till victory was won, and he could hand down a valuable heritage to posterity.

There are others—but the list is not a long one—who from the organization of the state have steadfastly and successfully labored to promote its horticultural interests, and they are now tardily receiving a part of the honors due for the noble services they have rendered their brother settlers in their new land. As the years lapse by these honors will increase, but most of

them will come too late to be enjoyed by those who so richly deserve them. It is ever thus, "No man can be pronounced happy while he lives." Mr Gideon was, however, an exception to the general rule. He lived to a ripe age and was permitted to see that his work was appreciated.

TRIBUTE TO PETER M. GIDEON.

O. F. BRAND, FARIBAULT.

When I first saw the program of this meeting, I was undecided about attending, but when I saw that a part of it was to be devoted to the commemoration of my old friend Gideon, I said I would go up, for I wanted to say something myself, because if there was ever a man in the United States whom I respected and honored it was Peter M. Gideon. I have known him since about 1868, and in those early days from 1869-70 and 1873 up to 1875 I was very familiar with him, and I looked up to him as a prophet. I used to love to visit him and talk with him and receive instruction from him. I looked upon him as a person who belonged to the world, and as I took a panoramic view of the world I recognized Peter M. Gideon as towering away above the commonplace, a high mountain peak in horticulture, and I felt that I wanted to come up here and say a word in his honor.

I want to say a word to the young men. In 1871-73, after the apple trees had all been killed in Minnesota, I visited all the orchards in the fruit growing sections of the state and saw the destruction that had been wrought. In November I went up to Mr. Gideon's place. I arrived there on a Friday noon, and found he was away from home. I was told he would be home soon, and waited until his return. When he came home he said I must remain with him until Monday. I was there from Friday until Monday, and had a great feast. He told me all about his early troubles. I want to relate a little of that history, Mr. President, so that the younger people may know what it cost Mr. Gideon to do what he did in the world. He said he had planted two bushels of apple seed, and they had been killed out. He was struggling out there as a pioneer; he had come up here for his health; he had no money; his trees had all been killed, and he said he had but one suit of clothes and they were patched so one could hardly recognize the original suit. As he was pondering over the situation as to what he could do to raise apples, an invisible being came to him and told him to write to a certain address in the state of Maine for apple seeds. He wrote to that address, and in the course of a few weeks he received a reply from a gentleman who said his letter had been handed to him by his son, and stated that he had sent him a package of crab apple seeds. In the course of time he received the package of crab apple seeds and planted them, and from that lot of seed sprung the Wealthy apple. You will note the persistency with which he followed out that one idea, notwithstanding his reduced circumstances, in striving to accomplish what he deemed to be for the best interests of humanity. There was no money in it for him. The matter was so managed that he could get but very little money for producing the tree which produced those apples. He was not a good manager in many respects. His mind did not run to making money. His mind was set on producing something good and valuable for humanity, and he accomplished it. I want the young people and all the people to understand and appreciate that it is a hard road to work for humanity, but it pays. There is a satisfaction in it

that those who have never tried it do not realize, and I think Mr. Gideon derived more enjoyment and satisfaction from the work he accomplished than did Alexander or Napoleon in their chosen work.

Capt. Cross: I want to add a word of interest to the story that Mr. Brand has told. A few weeks ago Col. Stevens told me this same story, and he added that one winter day Mr. Gideon walked all the way from his farm to Col. Stevens' place and asked him for a loan of five dollars with which he could send to Canada and Maine and procure a bushel of apple seeds, and out of that bushel of seeds he hoped to get at least one good variety. Col. Stevens let him have the five dollars; he sent for the seed, and out of that seed came the Wealthy apple.

A VISIT TO EXCELSIOR.

A. J. PHILIPS, SECRETARY, WEST SALEM, WIS.

After attending the very interesting and, I trust, profitable session of your state society, I esteemed it both a privilege and a duty to visit the old home and orchard of Peter M. Gideon, whom your society honored by the memorial service on Thursday of your meeting. Everywhere you go in his three orchards you see the work of his busy hands. Many fine top-worked trees are without labels. Time alone can reveal what the tops are, and we can only guess what the stocks are. While no doubt there are valuable fruits among these seedlings, I think, beyond a doubt, from their appearance, there are stocks among them that for top-grafting will rival anything that ever has been grown—vigorous, square shouldered specimens. I advised his son to cut some scions from some I selected and commence at once the production of stocks for that purpose. I felt while walking around the house and among the trees and while standing on the spot where the old Wealthy stood, that I was standing on sacred, historic grounds. I hope the property will be so arranged that much for the good of horticulture will yet be realized from Mr. Gideon's work.

Mr. Gideon is not the only Excelsior man who will be kindly remembered for his work, for in company with Bro. Wedge I visited the fine orchard of Mr. H. M. Lyman and saw the old Prolific, the finest specimen of an old crab tree I ever saw. Its spread is nearly thirty-six feet. This tree and fruit I consider destined to take the position among the crabs of the north that the Wealthy does among apples. While Mr. Lyman appreciated this and has produced over one hundred young bearing trees, still his modesty has kept him from pushing it out among planters as it deserves to be. I think your state did a wise thing when you placed it in your list. Mr. Lyman has other fine trees and a beautiful home surrounded with evergreens of thirty years growth. Here, too, I found a seedling tree that I think well adapted for a stock, at least I secured a few scions and will try it.

ANNUAL MEETING, 1899, MINNESOTA STATE FORESTRY ASSOCIATION.

GEO. W. STRAND, SECRETARY.

The Minnesota State Forestry Association held its annual meeting in connection with that of the horticultural society, in the court-house, at Minneapolis, Thursday, Dec. 7th.

The business meeting, which was held in the morning, was well attended, showing that the interest in forestry is far from latent.

President J. N. Cross called the meeting to order, and after the minutes of the former meeting were read the secretary's report and financial statement was presented.

Our association is one of the oldest in the United States, and it is a satisfaction to know that our efforts are at least appreciated. During the past year greater advances have been made towards the accomplishment of our aims than ever before. "In unity there is strength" and combining our efforts with those of the Bureau of Fire Protection, the newly established Board of Managers Forest Reserves, and also that of the Minnesota National Park and Forestry Association, we have every reason to believe that a powerful influence for good should result.

Although the association received no state aid from the last legislature it is still in position to do considerable good work, and taking everything into consideration stands upon a firmer basis today than it has for years.

A resolution was introduced requesting the secretary of state of the United States to order a reprint of the report of Gen. C. C. Andrews, made in 1872, setting forth the manner of applying scientific forestry as practiced in Germany to conditions in Sweden, which are in many respects similar to our own.

The election of officers was then proceeded with, resulting in the re-election of all of the old officers, which are as follows:

OFFICERS FOR 1900.

PRESIDENT

Judson N. Cross.....Minneapolis.

SECRETARY.

Geo. W. Strand.....Taylors Falls.

TREASURER.

R. S. Mackintosh.....St. Anthony Park.

VICE-PRESIDENTS.

1st Dist.—Wm. Somerville.....Viola.
2d Dist.—Alfred Terry.....Slayton.
3d Dist.—O. F. Brand.....Faribault.
4th Dist.—W. P. Allen.....St. Paul.
5th Dist.—S. M. Owen.....Minneapolis.
6th Dist.—Asa Paine.....Carlton.
7th Dist.—O. A. Th. Solem.....Halstad.

EXECUTIVE COMMITTEE.

Col. J. H. Stevens.....Minneapolis.
A. W. Latham.....Minneapolis.
J. S. Harris.....La Crescent.
Prof. S. B. Green.....St. Anthony Park.
H. B. Ayres.....Carlton.

It was considered advisable to have as many of the remaining copies of "Forestry in Minnesota" as possible bound in cloth for distribution, and to that end the secretary was instructed to act, using as a revolving fund the necessary sum from the association treasury.

The afternoon program of the horticultural society was to have been mainly under the auspices of this association, but owing to the memorial exercises of the late Peter M. Gideon, which occupied the greater portion of the time, most of the papers had to be omitted.

After a few opening remarks by the president, Capt. J. N. Cross, Hon. S. M. Owen was given precedence and in a very interesting manner told of "What I Saw of Forestry in Europe," dwelling more particularly on the forest conditions and management in Switzerland, which, in his estimation, was one of the best examples of state socialism and also the finest system of forest economy in existence. If the same feeling prevailed among us in this country, conditions would soon change—if we could only realize that we, ourselves, are the state. Let us get the feeling of the Swiss; let us do something for posterity, and let us insist that the state take up this matter. There is nothing which requires a higher degree of statesmanship in its handling than the subject of forestry.

A resolution was introduced and adopted requesting the Board of Control of the Farmers' Institutes to instruct the superintendent of institutes, that, whenever practical, at least one address on practical forestry be given.

Prof. Green also addressed the meeting on "Forestry Experiments Which Should be Undertaken in Minnesota." Spruce, it seems, is destined to become one of the most profitable trees we could plant, particularly the Norway, on account of its rapid growth and the ease of obtaining seeds. It should grow from eighteen to twenty inches in diameter in thirty years. The Colorado form of the Douglas spruce should also be planted for trial in the northeastern portion of the state. Spruce is best adapted for the manufacture of paper. Black spruce is the kind that is mostly used by the Cloquet mill, which uses about nineteen cords per day and manufactures about nineteen tons of paper, most of which is used by the Minneapolis papers.

In the discussion as to the age to which it would be profitable to grow trees for timber, Prof. Hays remarked that according to the European system of forestry, pine was cut when about ten or twelve inches in diameter.

Mr. Older, of Luverne, cited an instance where twenty trees were growing on an acre and were increasing in value at the rate of $1 per tree each year. The owner considered it the most profitable crop he could produce from the land.

The afternoon being well advanced, none of the other papers were taken up, but they will be published in future numbers of the Horticulturist as well as in a number of other journals.

ECHOES FROM FARMERS' INSTITUTE.

HON. A. K. BUSH, LECTURER ON HORTICULTURE.

Park Rapids, Minn., Dec. 6, 1899.—We have just closed a very successful meeting at this place; attendance good, with interest well maintained on all subjects. Horticulture was given a full share of time and attention by both platform and audience.

I was out to visit Mr. Usher and found his plantings of small fruits, also fruit trees, doing well. He has about two acres planted to currants, gooseberries, raspberries, etc., with about seventy-five apple and plum trees. Much of his coming crop is engaged at his price. The Older blackcap is doing best; Loudon is also doing well; blackberries are a failure with him. No one need be without home grown small fruits even in this part of the state, where we are within the Lake Itasca State Park region, being about thirty miles from that famous lake.

Alexandria, Minn., Dec. 12.—A. W. Latham, Secretary: The package of books, magazines, etc., came to me just before starting for this place. I opened them in the Institute hall; had but a few minutes to distribute and get members for our horticultural society, as the corps was separated, part coming here for work tomorrow.

I got two members in about as many minutes; think a dozen more would have joined us if I had had time during the afternoon. All appeared very much interested in the Farmers' Fruit and Vegetable Garden when I presented the subject. Many questions were asked. Found one party who raised 300 quarts strawberries on small garden patch, another who had strawberries measuring six inches about them; others growing good apples, with courage good and prospects bright in Stearns county.

Fergus Falls, Minn., Dec. 15, 1899.—Dear Friend: Below find list of new members Horticultural Society:

C. H. Brush, Fergus Falls, O. H. Brandhagen, Rothsay.

F. L. Ward, Fergus Falls; Walter Hogan, Fergus Falls; H. L. Burgess, Amor; H. Ongstad, Pelican Rapids; Henry Oberg, Kensington; Oscar Barsness, Urness; A. M. Dubry, Alexandria; Henry Huseby, Urness. (Books delivered.)

The above list of ten new members was secured at the Alexandria and Fergus Falls meetings, where 200 copies of the Fruit List and 50 magazines were placed in the hands of people who appeared anxious to get them, as they were taken with thanks. The farmers are very attentive to my talks on the Farmers' Fruit and Vegetable Garden, as many of them will plant evergreens and fruit trees next spring, being encouraged by reports of those who have bearing fruits near Fergus Falls. One man sold twenty barrels home grown apples, another grew fourteen quarts raspberries on seven small bushes of the Older variety, which I find is doing well in this part of the state.

Orchards or gardens protected with evergreens are doing best. I am fully convinced that such shelters must be planted about all fruit trees in this section, if one expects to succeed.

Wealthy apples grown here will keep nearly all winter. Plums are doing well when planted and given any kind of care.

Your Corner.

GOOD WORDS FOR US.—Dear Sir: I have just received a copy of the report of your society for the year 1899. I wish to compliment you in regard to its make up. I consider your Reports the most valuable works on horticulture that reach this office. I let no opportunity escape to speak a good word for your Annual Reports to our citizens, especially those of northern Iowa.

Chas. F. Gardner
President Ia. State Hort. Society.

AN OLD MEMBER.—During the twenty-eight or more years I have belonged to this society I have received the annual report and the horticultural monthly, which are well worth the annual membership fee. Some of our best nurserymen who have visited my orchard think the money value is worth from one to two thousand dollars. I owe a debt of gratitude to this society that I never can repay for the financial help it has given me in the returns now furnished from the orchard. I think there could be no greater investment for the young men of Minnesota than to become members of this society.

Morristown, Minn., Dec. 18, 1899. Seth H. Kenny.

A RESPONSE.—A. W. Latham, Secretary.—My Dear Sir: Your letter informing me of the action of your society at its recent meeting, making me an honorary life member, was received while I was preparing to attend our state meeting at Des Moines. In acknowledgment, I must say that this expression of fraternal interest and kindly regard gives me sincere pleasure.

And while I may not find language to suitably express my appreciation of the honor that your society has done me, I assure you that I shall treasure their action as one of the most pleasant memories of my life. It will surely intensify my desire to still serve the interests of northwestern horticulture with such zeal and fidelity as will merit the continued esteem of the members of your honorable Horticultural Society. Faithfully yours,

Charles City, Ia., Dec. 18, 1899. Chas. G. Patten.

ABOUT STATE FAIR PREMIUMS.—I heartily approve the action of our late meeting in recommending that the premiums on collection of hybrids and crabs at our state fair be limited to ten varieties (although for single plate for '99 there were sixteen varieties on the list).

I would be very glad to have those parties that make up the premium list make a somewhat similar restriction to the collection of plums. There are

now seventeen varieties on the list, and some of them are nothing extra. If the list of plums should be limited to, say, twenty varieties—perhaps fifteen varieties would be just as well—it would discourage the exhibiting (and growing as well) of those small varieties, and would result, I am sure, in a much more numerous exhibit of our best kinds, which, of course, means our largest and most showy varieties.

The heavy rain of Dec. 9 extended to this part of the state and gave our orchard and fruit plants a much needed wetting.

Windom, Minn., Dec. 15, 1899. Dewain Cook.

WORDS FROM AN OLD TIME WORKER.—I notice the departure of another old member, our P. M. Gideon, to join his neighbor Gould and a host of others who have gone before, while we of the advance class are waiting by the river's brink to be ferried over the dark river a little later.

From a sketch in our Florist's Exchange of last week, it seems he was much older than I, his birth occurring in 1818.

I used to see him many years ago, as he was often at my nursery, when that was the principal one of all the vast country where now they are counted by hundreds, including florists and small fruit growers. I never was at his home or your's, though I took dinner once with the Goulds many years ago when we were all young and full of work.

Since I last wrote you the pioneer florist of Minneapolis, Wm. Buckendorf, has passed away, as also Mr. Fleischer, late of St. Paul, but formerly of Minneapolis, if my memory is not at fault.

I do not remember if there were sketches of the above in Horticulturist, although both were old settlers and prominent in our profession.

Truman M. Smith and I are about as we have been for some time. He comes into town with fruit nearly every weekday, while I am pushing seeds, bulbs, cacti, mostly for the East and Europe in a wholesale way.

San Diego, Cal., Nov. 16, 1899. L. M. Ford.

A PRIZE LOOKING TOWARD IMPROVEMENT OF HOME GROUNDS.—Can your society not offer a prize for the best survey of house grounds and the best plan of home grounds? You can undoubtedly take advantage of a little leaflet that I am preparing to give instructions for the preparation of simple surveys of home grounds by the owner or his boys and girls, on which all existing conditions may be indicated. It is in my opinion absolutely necessary that one should know the existing conditions before he can pass intelligently upon any plan for the re-arrangement of grounds. A plan on paper means almost nothing without a knowledge of such conditions. This leaflet that I am preparing is to be used by citizens of Menomonie, Wis., and Ishpeming, Mich., and by my representatives there, to secure just such conditions on every place in the town, in order that I may make suggestions for improvements on each place. These suggestions will not involve any considerable expenditure of time or labor, for it must be recognized that the majority of lot owners cannot make such expenditure. If every one does a little, however, each year toward such improvement, it will raise the standard of the town immensely.

Boston, Mass., Dec. 2, 1899. Warren H. Manning.

Secretary's Corner.

REPORTS OF DELEGATES TO KINDRED SOCIETIES.—The reports from the delegates who have represented this society with the various Iowa horticultural societies are all received, and it was hoped to print them in this number, but the prospect now is that some of them will be crowded out by matter which should necessarily appear in this number.

NEW HONORARY LIFE MEMBERS.—At the late annual meeting of this society, the following were unanimously elected honorary life members: J. G. Bass, Hamline; R. Knapheide, St. Paul; O. M. Lord, Minnesota City; Wm. Mackintosh, Langdon; Wm. Oxford, Freeburg; S. D. Richardson, Winnebago City; Charles G. Patten, Charles City, Ia ; Prof. N. E. Hansen, Brookings, S. D.

HAVE YOU RECEIVED THE 1900 REPORT?—Reports are not sent out to members who live in or near Minneapolis, but they are invited to call at the secretary's office and receive them in person. If members at a distance have not yet received them, please address the office, as they have been sent out some time since. They go usually by express, and there is sometimes delay in delivery.

CHANGES IN THE TRIAL STATIONS OF THE SOCIETY.—At the personal solicitation of Mr. Clarence Wedge, the trial station at his place, at Albert Lea, has been discontinued. The number of stations is kept intact, however, by the location of a new one at the place of Mr. J. S. Parks, of Pleasant Mounds Mr. Parks has had a large experience in growing apple seedlings, and has much of his own already of interest on which to report.

WILL YOU HELP RAISE THE MEMBERSHIP TO 1000 THIS YEAR? — This ought not to be a hard thing to do with all the great advantages this society has to offer to its members in the way of books, magazines and plant premiums. Nevertheless, it *needs your help* if it is to be accomplished. Will you send in at least one new name? You will be well paid for doing so, too, and if you do not want the book offered to you as a premium, give it to your new member.

LIST OF THOSE SENDING NEW MEMBERS IN DECEMBER:

O. M. Lord, Minnesota City, 1.
August Wittman, Merriam Park, 1.
T. R. Cashman, Owatonna, 7.
J. C. Cramer, La Crescent, 2.
Chas. B. Clark, Minneapolis, 1.
O. A. Strong, 1.
A. C. Ylvisaker, 1.
Bertel Christenson, Hutchinson, 1.
S. B. Green, St. Anthony Park, 1.
A. H. Pickle, Sleepy Eye, 2.
J. C. Walker, Rose Creek, 1.
A. Terry, Slayton, 1.
D. S. Hall, 1.
W. W. Pendergast, Hutchinson, 2.
John Zeller, New Ulm, 2.
G. C. Matson, 1.
J. S. Jerabek, Silver Lake, 1.
C. Schiebe, 1.
Mrs. E. B. Crocker, Minneapolis, 2.
Jas. Enden, Godahl, 1.
A. K. Bush, Farmer's Institute, 15.
Mrs. Thos. Tollefson, Canton, 1.
A. G. Long, Excelsior, 2.
Hans Mo, Sleepy Eye, 1.
W. F. Naylor, Wrightstown, 4.
Jewell Nursery Co., Lake City, 5.

DISTRIBUTE YOUR 1899 "HORTICULTURISTS."—Now that you have received the Report for 1899 you have no longer occasion to keep the magazines received during 1899, as they are to be found in the 'bound' volume. Give them to your friends and neighbors at once, while fresh, and follow the distribution up with a little personal work, and you can easily send in one or more new members. It should be easy to get new members for what we have to offer for $1.00.

SEND FOR FOLDERS FOR DISTRIBUTION.—The secretary has prepared the annual folder for 1900, and it is intended for general distribution. They will be sent free to anyone for this purpose in any quantity that can be used to advantage. The folder is a concise resume of the work of the Society, containing the fruit list, list of officers, and concise information as to membership, premiums, publications, etc. How many can *you* use in bringing the membership up to 1,000 this year?

PROF. GREEN'S ILLUSTRATED ARTICLES IN THIS YEAR'S MAGAZINES.—Prof. S. B. Green, Horticulturist at the Minnesota State Experiment Station, has laid his plans to spend the coming summer in Europe studying horticultural conditions and methods there with the purpose of bringing home whatever he can find of value for our own country and especially for the Northwest. Arrangements have been made with him to furnish a series of illustrated articles pertaining to these investigations. Our acquaintance with Prof. Green assures us that they will be of exceeding interest. During the months prior to his departure he will furnish articles of local interest which will be well illustrated. This alone should make the Horticulturist this year the most valuable series we have issued.

A NEW EDITION OF GREEN'S "VEGETABLE GARDENING."—A new edition of this valuable work is just from the press. The changes made are in the method of arrangement rather than in the addition of new material. In the previous edition, and, indeed, in all other works on this subject with which the writer is acquainted, the list of varieties of vegetables is arranged alphabetically; but in this new edition they are arranged under classes botanically, and each class is preceded with a brief description of its characteristics and the names of the principal varieties to be found in it. As a text book, this change will greatly improve the work, and it will inconvenience no one, as the index points the way easily to any particular variety desired to be found. Have you this book? If not you should have it, and what better way to secure it than to send in two new members for the society and receive it free for your trouble? For sale at this office at $1.25.

PLANT PREMIUMS FOR ALL MEMBERS IN 1900.—Arrangements have been perfected to send to each member who desires them two premiums of plants. This applies to *all new members* and also to *all old members* who renew their membership before February 1st—but the application must be made at the time of making the remittance. Members who have already renewed can secure the premiums by addressing the secretary. The premium list and directions for making selections will be found on the inside of the front cover page of the January number of the Horticulturist and subsequent numbers during the year. The principal object of this distribution is to interest every member in the work of experimentation being carried on by the society. If this plan meets with favor, it will undoubtedly be continued. One of the premiums this year is seedlings apple trees raised by Peter M. Gideon. Mr. Gideon left a quantity of these grown from selected seed for experimental purposes, and these have, fortunately, been secured for this distribution.

HORTICULTURAL HALL, MINNESOTA SCHOOL OF AGRICULTURE, ST. ANTHONY PARK, MINN.
CONSTRUCTED IN 1899.

THE MINNESOTA HORTICULTURIST.

VOL. 28. FEBRUARY, 1900. No. 2.

HORTICULTURAL HALL, STATE SCHOOL OF AGRICULTURE, ST. ANTHONY PARK, MINN.

(SEE FRONTISPIECE).

This handsome structure, intended for the use of horticulture and botany at the Minnesota School of Agriculture and State Experiment Station, has just been completed and was occupied on Jan. 1, 1900.

The need for this building has been felt for some years, but it was only a year ago that the state legislature made the necessary appropriation for its construction. The building cost $32,000, and the balance of the $35,000 appropriated was spent in equipment.

Its location on the south slope of the hill upon and around which are grouped the various buildings of the school, gives a fine view from its front and makes it a conspicuous and pleasing object even from points some miles away.

It consists of the main building, an annex for a greenhouse, laboratory, a machine shed, about 4,000 feet of glass, and a good nursery cellar. The main building is 50x80 feet, and three stories high. Since the heat for it comes entirely from a central main plant, there is no space used for a separate heating plant in the building. One-half the first floor is used for dressmaking and sewing, and the other portion is used mainly for a class-room for mathematics and English. The main floor is used for a horticultural class room, laboratories, and offices. The third floor is used for botany and physics. The greenhouse laboratory is 26x50 feet, is one story in height, has a tiled floor, and is lighted from overhead. The machine shed is 20x80 feet. It is used for the exhibition of machinery which is sent to the Horticultural Division for study, and is in effect a machine museum. The nursery cellar is 20x50 feet, is well ventilated and nicely adapted for its purposes. There are two greenhouses, each of which is about 20x110 feet, divided into two parts, so that the temperature of each part can be controlled separately. The facilities in this building are such that we have now perhaps the best horticultural building to be found in this country.

We now have room to take care of the large number of students which seek admittance to the classes here. This term the classes in horticulture number 118 students in one class and 60 in the other. The special feature which the new building will give us and which we hope to develop is what is known as "greenhouse laboratory work," and this is well provided for; and we think that with the increased attention that will be given to it, it will become a very important feature of the school work. This work consists in practice by the students of seed sowing, transplanting, the growing of plants by cuttings and grafting, the packing of nursery stock, pollination, testing of seeds, the making of Bordeaux mixture and grafting wax, and similar horticultural operations.

Trial Stations, 1899.

ANNUAL REPORTS.

CENTRAL TRIAL STATION, (STATE EXPERIMENT STATION) ST. ANTHONY PARK.

PROF. S. B. GREEN, SUPT.

The winter of 1898-99 did not cause an unusual amount of root killing of plants at the Experiment Station, but there was more killing back of their tops than usual, although most have recovered and are in very excellent condition. On the whole, our loss from the effects of last winter was little, if any, more than we generally expect in severe winters.

The past season has been a very favorable one for plant growth. There has been an abundance of rain, and no especially bad condition at any time. The work of the Horticultural Division of the Experiment Station is increasing in extent of the land occupied from year to year. As our plantations get older object lessons increase in our orchard, small fruit and forest plantations. We follow the practice of keeping a dust blanket on the land during the dry weather. This seems to be the best method adapted to this section. We aim not to cultivate deep after the first of August, but to cultivate sufficiently to keep the weeds from getting a start. The campus about our buildings, as well as our work in the fields, is increasing in interest year by year. During the last year there has been a good deal of digging up of the lawns, due to the putting in of a central heating plant and some extra sewers, but as these improvements are completed the chances of laying the grounds out permanently are increased, and no serious disfigurement of our grounds has resulted from these improvements.

It is our aim to keep a good assortment of trees, shrubs, and herbaceous plants growing in the beds and about the grounds of our campus, with some specimens labeled with their common and their botanical names, and with the name of the country in which they are indigenous. This adds to the interest of our collection for visitors and students. Two years ago we made a change in the method of keeping the records in this division. Previous to that time the records had been kept in books, which, as they were needed, were corrected and revised. Under the present system, all the records are kept on cards. The records of the orchards, for instance, are kept by having a white card for each row, and a number for every place for a tree, and a card for every tree. In this way it is possible to expand the records and keep a sort of debit and credit account with every tree. This method adds but little to the expense of what it was formerly, and it is far more com-

plete and satisfactory. Our plantations are gone over each year, and checked up to date, and a record for each tree is made upon the card assigned to it. The collection of photographs has become so bulky that it has been found impracticable to keep it satisfactorily in the old way of pasting the photographs into a large blank book, and instead we have adopted the card method here, and in this way the photographs can easily be classified under the different subjects, which makes it easy to find what is wanted. We have now about 1,000 negatives on record in the office.

We have found that it is very unsafe to make reports as to the hardiness of varieties of apples or plums that are growing on our grounds unless they have fruited here, and now we do not regard them as being true to name until we have fruited them and are sure of the descriptions.

APPLES.—We have now perhaps 300 varieties of apples growing on the grounds of the Experiment Station. These are located in different

PORTION OF OUR RUSSIAN (ORCHARD A) IN AUGUST.

orchards, which as a whole are doing very well. The first plantings were made in 1886, when Prof. Porter set out a few trees; but the larger plantings were made in 1888 and 1890.

Orchard A, commonly known as the "Russian Orchard," was mostly planted in 1888. It consists of something over 1,300 trees located upon the open prairie, without windbreak or other protection within 30 rods. When first planted it contained something over 200 varieties, the most of which were from Russia. These were planted six feet apart, in rows twelve feet apart, and generally six trees of each kind were set. As a result of this, there are many vacancies, due to the tender varieties dying out entirely, and there are other places where hardy varieties were set that the trees are too thick, or would have been had they not been transplanted a few years ago. These

vacancies and crowded places, of course, are object lessons, for which purpose the orchard was planted, and we are now beginning to get valuable data from them. These trees were all from root grafts when originally set, but about five years ago we put in some of the vacancies perhaps 50 Virginia crabs, which we have been top working. For seven or eight years the land was cultivated in squash each season until the trees made so much shade that it was unprofitable to do so any longer. Since that time it has been kept in a dust blanket during the dry weather of summer except as buckwheat or some other cover crop has been used to add humus to it. It has been plowed late in the autumn, turning the soil towards the trees, thus leaving a dead furrow in the middle between the rows and the soil loose to protect from winter drouth. In relieving the crowded condition of some parts of the orchard, it has seemed desirable to move some trees that were at least four inches in diameter and 12 or 15 feet high. This we have done in the autumn, moving them with such balls of earth as we could conveniently. After digging around the tree and getting the ball of earth loose, we have tipped the tree over and pushed a stone boat underneath it, and dragged the tree on the stone boat to its new location.

Orchard B. Orchard B is located upon the north slope of the wooded gravelly ridge north of the school buildings, there being from one to four feet of clay covering over the gravel. This orchard was planted in 1890. Most of the trees are from root grafts. About 50 Virginia crabs were planted, which have been top worked. It has been kept in clean cultivation, and the space between the rows used for the growing of nursery stock. In this orchard we have about 40 varieties of apples, including perhaps 20 varieties from Hungary, many of which are large enough so that we can expect them to fruit before long. The trees of Virginia crab have been top worked with new and interesting sorts. This orchard has made a very good growth, and has produced some fruit.

Orchard C was planted in 1898. It is located on the flat land north of and below the gravelly ridge where Orchard B is located. It is made up of 400 trees. The special object in planting this orchard was to make it a commercial one, and the intention has been to put out only varieties of a very promising degree of hardiness. The trees made a very good growth in the summer of 1898, and in the autumn were laid flat on the ground and covered with earth, so that they were not injured by the severe weather of last winter, which was so very hard upon newly set trees. I regard this method of treating young orchards and newly planted trees as of much value. All of the vacancies in this orchard, and one whole row which was not previously planted, were set out this fall, the trees being laid flat on the ground since planted. While fall planting as a general practice is not as desirable as spring planting, yet, since in the spring we are so greatly rushed by our work, we find it very desirable to do all we can in the autumn, and we find that fall planted trees that are laid flat on the ground, and covered with several inches of earth and a little mulch, generally come through the winter in good condition, and I think this method of planting could frequently be followed to advantage in this section. It amounts practically to "heeling in" each tree separately in the hole where it is to remain.

Besides Orchards A, B and C of named varieties, we have what is known as the "Seedling Orchard," which is made up of about 2,500 trees planted four feet apart in rows eight feet apart. These trees are seedlings of our

very best named sorts, and largely from hand-made crosses between the Duchess and Hibernal and the Charlamoff and Hibernal.

The winter killing of roots of apple trees last winter has led to much dis cussion as to the importance of getting hardy stocks for them, and just at present interest seems to center around Pyrus baccata seedlings. To throw light on this subject we have grown three varieties of this crab. One is no larger than a medium sized green pea, with a very long slender stem. It is, however, quite productive, and the tree is a good, vigorous grower, and, so far, is free from blight. The seed, however, does not grow as freely as it is desired. This variety is, I think, what is sometimes known as P. prunifolia. We have also a yellow Siberian and a red Siberian. These have fruits much smaller than the common red and yellow Siberian. One of these trees seems

PYRUS BACCATA. VALUABLE FOR HARDY SEEDLING ROOTS.

inclined to blight, but the other is, so far, entirely free from it, although the branches of the two interlock. Each produces an enormous amount of fruit regularly each year, which might be of some value for preserving, but it is rather too small for general use for this purpose. Our interest in this as a stock, it seems to me, centers around the fact of its being very hardy, of fairly vigorous growth, and in the important additional fact that it produces a large amount of seed, which grows with great certainty. I think these latter are the most promising of anything that we have for stocks. We have sent out about 1,500 of these seedlings for trial to nurserymen and orchardists the past year.

PEARS.—We have been trying for many years to get a variety of the pear that will be of value here, and we have thought that if we could secure a

good hardy stock on which to work them that it would be a great improvement over our present method of growing them, which is by grafting them either upon apple stocks or upon French seedling pear stocks. On the former, they do not make a very strong growth, and the latter is too tender. We have raised the past year several hundred seedlings of Pyrus betulifolia, which we have obtained as a stock from the Arnold Arboretum, and we shall watch the development of them with much interest; but owing to some previous experience with a similar form of this we are disposed to doubt its being of much value for us here.

The plum stocks that have been tried here consist of seedlings of P. Americanus and P. myrobolan, and the stocks commonly known as "Mariana," which are grown from cuttings. Of these different stocks the Americanus have proved by far the most satisfactory, as on them our trees make a vigorous growth, are not disposed to sucker very freely, and the stocks are perfectly hardy. The myrobolan stock is rather too tender for us here, and I think does not make as good a union with our native plums as native species, although some trees have done fairly well on it.

DISEASES AND INSECTS ESPECIALLY AFFECTING THE APPLES.—Among the insects that are becoming quite injurious to the apples here is the codlin moth. This moth lays its eggs on the fruit during the latter part of the spring and early summer, and the insects bore into the fruit, causing it either to fall off or ripen prematurely, making what is commonly known as "wormy apples." When our orchards first came into bearing here, we had scarcely any trouble from this insect; but during the last few years it has increased very much, and is now quite troublesome, and it will probably be necessary for us to take some means of holding it in check.

The tent caterpillar has occasionally been somewhat injurious in our orchards, but a little attention has prevented our having any serious trouble from this cause. Our best remedy has been the destroying of the egg clusters, which may be easily seen in the branches in winter and early spring, and in gathering the worms in the tents as soon as they hatch out.

In seasons when fire blight is prevalent in this section, we seem to have rather more than our share of it, and yet by cutting the blight off we seem to have stopped it from spreading rapidly, and we have been able to keep it in check, and our orchards quite free from serious injury from this cause.

Sun scald we have avoided nearly entirely, except in the case of those trees that are especially liable to sun scald in the branches. We have done this by protecting the trunks and the large branches from the sun. Our chief method of doing this is by tying corn stalks upon the south and west sides of the tree each autumn. These corn stalks are generally taken off in the summer, although there is no special need of doing so except that the trees look more tidy with them removed. We have also used wood veneers, which are thin pieces of cottonwood, or similar wood, which when thoroughly soaked in water will bend around the trunks of the trees. These pieces of wood are held in place by a small piece of wire, and have proven quite satisfactory. We have also used wire mosquito netting and burlap for this purpose. We have found that boxing up the trunks of the trees not only prevents sun scald and injury from mice, and to a large extent from rabbits, but that it seems to make the trees much more hardy. I think this is due to the fact that the trunk being well protected, and the foliage of the

trunk not having been injured by winter, it is able to greatly assist the rest of the tree in overcoming any injurious effect of the severe weather. In our experience with these boxes on the trees, which has been for some six or seven years, we have generally filled them with soil and kept them filled the year round. This has not apparently resulted in any injury to the tree. In a few cases small roots have been sent out by the trees in the earth in the boxes, but on the whole there has been very little of this. I am of the opinion that this treatment of the apple tree is especially well adapted to the requirements of the small orchardist for those in severe locations. It should be generally understood by our people that a dozen apple trees well planted and well cared for will produce more fruit and be far more satisfactory than a large number of trees set out in the ordinary, neglectful way.

PORTION OF ORCHARD A, IN NOVEMBER; LAND NEWLY PLOWED; TREES "BANKED" AND CORNSTALKS ON TREES TO PREVENT "SUNSCALD."

PLUMS.—Our plums have been grown for a number of years next to our nursery stock in the old nursery. They have grown so strongly that they are now in pretty full possession of some portions of this nursery, and will soon have the land entirely to themselves. A new plum orchard has been started on the gravelly ridge near Orchard B. This orchard it is intended shall be extended the coming year, and made to include all our varieties of special promise. We have in cultivation now about 90 varieties of plums, most of which are of native parentage. While we have tried a large number of the European plums, we have not found a single variety that is adapted to our conditions. Some of the Russian sorts, the Moldavka and Early Red, for instance, have held on with us, seeming to be sufficiently hardy for our conditions; but the small amount of fruit that they have produced, and their tendency to become infested with black knot and the curculio, make them of very little value for us, and thus far we have found no variety among them that it is worth while to recommend for planting. Among the

Japanese sorts there are none that are sufficiently hardy to make them of any special value here. In a few of the most favorable locations in this state however they may be desirable. We have raised a large number of seedling plums and have fruited some on our own grounds, but have sent large numbers to our sub-stations at Grand Rapids, Crookston and Lynd. At Coteau Farm a large number of plum seedlings were planted in the forest plantation, and while they were somewhat crowded with trees, yet they have generally made a most excellent growth, and have been very productive.

DISEASES OF THE PLUM.—The plum pocket is very abundant in some years and in some portions of the state. At our Experiment Station, by destroying the diseased fruit as fast as it has appeared, we have succeeded in preventing its getting any hold here. Some experiments with the peach leaf curl, which is a disease of a similar nature to the plum pocket, seem to show that Bordeaux mixture will probably prove a great help in preventing the spread of this disease. The rot on the plums, or Monilia, has become very abundant in this section during the past three or four years. This disease is characterized by a rotting of the fruit during the summer, and the dried, rotted fruit remaining on the tree over winter. It is in this dried fruit that the disease is carried over winter, the spores of which are ripened and distributed during the moist weather of early spring. Remedies for this are picking and destroying the diseased fruits, and spraying the trees with Bordeaux mixture of double strength early in the spring before growth starts, and then spraying the fruit with the ordinary Bordeaux mixture several times during the summer. I believe that it is perfectly practicable to keep this disease in check.

The curculio seems to be about as abundant the past year as for a number of seasons. By the use of the sheet and the jarring method we have been able to keep it pretty well in check. The plum aphis, or leaf lice, have not been as abundant the past year as during some previous seasons. We have found that this insect may be entirely kept in check ,and the trees may be entirely relieved of it, no matter how badly they may be infested, by the use of tobacco smoke, as described in a former number of our "Horticulturist."

The plum borer has been especially abundant the past few years, and has caused to many the mysterious loss of their plum trees. We have been greatly troubled with it here. In the case of a neighbor's orchard I found, in looking over the trees, that some of them had as many as seven borers in them, and that they had completely girdled many trees. A little attention to this matter in looking over the trees and taking out the borers in the fall and spring, will result in keeping the trees entirely free from serious injury from this pest.

STRAWBERRIES. Our strawberries produced a fairly good crop this year, and are in a fair condition for another season. In cultivating strawberries, we follow the plan of setting the fruit two feet apart in rows four feet apart, and allow all runners to grow; but in the case of strong growing varieties, like the Bederwood and Crescent, we remove a part of the runners, so that they will not be too thick on the land. We keep the bed well cultivated during the growing season. On the approach of cold weather, generally the latter part of October, or early in November, we put on a covering of straw. We prefer to do this before severe freezing weather, as we like to have the leaves bright and green when they are uncovered in the

spring, and very severe freezing without protection will sometimes kill the foliage in autumn. We uncover rather late in the spring, removing most of the straw from over the plants, but leaving as much as possible between them. We do not cultivate in the spring of the year. In covering strawberries we have found rather heavy covering desirable, especially in winters when there is no snow on the ground, since after some winters when we have not had snow the plants have been so weakened by severe freezing that, while they would start into growth, yet they did not have sufficient strength to mature their fruit properly, and as a result a large number of nubbins were formed. We have always found that such plants are not easily moved; at least not until late in the spring, after they have made a good growth of new roots. If very heavy covering (8 inches solid straw) is to be resorted to, the best plan is to put the rows six feet apart, which allows plenty of room for storing mulch between the rows in the spring. In this place, between the rows, it can be kept until all the danger from frost in the spring has passed, and it is then in convenient place for covering the plants on very frosty nights when they are in flower. There can be no question about the practicability of this latter way of protecting the flowers of strawberry plants from being destroyed by frost, and it should be more generally practiced, since without it the work of growing the plants for nearly two years may be entirely lost. It is our custom to fruit the beds at least two years in succession, and the beds are renewed by mowing off the plants and weeds close to the ground as soon as may be after the crop is gathered. This growth of weeds and plants is than burned on the bed if it is very dry. If the weather is moist so that it is impracticable to get a quick burn on the bed, then the material is either raked into the rows between the beds before burning, or else it is carried off of the bed and burned. I think that much the best way is to burn it on the bed; but this is not safe except when the material is very dry so that it will burn quickly. If it is at all moist, and lies over the plants and slowly burns, it is apt to kill them out.

As soon as the burning is over, we put on a riding corn cultivator and go over the rows several times, leaving a strip of plants about 16 inches wide for each row. The space between the rows is kept well cultivated until the plants which have been left have started, when the rows are gone over and the beds thinned by taking out the old and weak plants so that they will stand about six inches apart each way. With this treatment of the bed we have generally got as good results from the second crop as from the first.

We have grown 56 varieties of strawberries this year. Bederwood seems to be the best all round perfect flowering variety, either for home use or for general marketing. Its special value for recommending to beginners lies in the fact of its being so very vigorous and productive, and that it is bi-sexual, not requiring any other plant near it for fertilization. The fruit is rather soft, but does very well for home use and the near market. The Haverland is a fine, light colored berry that is very productive. The Warfield has not been as productive with us for the last few years as previously, but holds on well with many growers in this vicinity. I am inclined to think that our plants have degenerated and that we should renew our stock of plants of it. William Belt produces large fruit, but is not sufficiently productive. Marshall is of about the same value as William Belt. Nick Ohmer is a light red, short bodied berry of good quality that

has been fairly productive. Hunn is a variety sent out by the New York Experiment Station at Geneva. It is a late pistillate sort, and it is recommended that Gandy be used to produce pollen for it. We received 50 plants two years ago. They made a good growth the first year, but the second were so badly rusted that the crop was ruined. Bissel had done fairly well. Mary is a very desirable pistillate sort of light red color, and very productive. Ridgeway is a good late, light red berry of firm flesh. Glen Mary is a light red, conical berry, that is fairly productive. Lovett has been very productive in years past, but this year did not do so well as usual. Crescent seems to be as reliable as ever, and while the fruit is small and of rather inferior quality, yet it is so very vigorous and productive that I am inclined to think that it is one of the most profitable sorts for planting in severe locations.

RASPBERRIES produced a very large crop of fruit this year, and the plantations are in very good condition for next season, although there is more anthracnose on the canes of some varieties than was the case a year ago. We regard the Loudon as our best red raspberry. The objection that it is not easily picked on account of its adhering so closely to its receptacle has never been especially noticeable here, and its great productiveness and vigor make it most desirable.

Marlborough has never been productive on our land, although on heavier and better soils it does remarkably well.

The Cuthbert has some years done remarkably well here.

Miller's Red has not proved very productive with us, and the Loudon is so much superior to it in every way that we do not consider the Miller of any special advantage.

King is an early red raspberry which makes a strong growth and produces a large amount of fruit early in the season, but we do not regard it as superior to the Loudon.

Turner is the best for general planting of the older varieties of raspberries, and is very hardy. And although the fruit is somewhat soft, yet it is still a very desirable variety for planting in the home garden and for near market.

Columbian is a wonderfully strong grower and very productive and bears large, purplish red fruit. While it makes a very strong growth, yet the canes may be bent to the ground quite easily and covered. It seems to have great vitality and the power of producing a large number of fruiting laterals from near the surface of the ground in case the top of the plant is injured, a quality which is very desirable. If it only had a bright red color, it would be one of the most popular varieties for marketing. It is well adapted for home use, although not for marketing, as the purplish color color of the berries makes them look as though they were stale, even when they are first picked.

Nemaha is our best black cap raspberry. It is difficult to distinguish it from the Gregg, but I am disposed to regard it as being the hardier, although there is very little difference between the two.

Progress is a very good early black raspberry.

Kansas is a good mid-season berry, and seems to be gaining in favor.

Older is a strong-growing, productive sort, of good quality, but it is soft, and on that account I doubt if it will prove profitable for shipment. It is, however, a desirable sort for home growing.

BLACKBERRIES. Among the blackberries that we have tried are included all the promising sorts of the old list, and most of the new ones of promising hardiness. As yet we have found nothing which combined as many good qualities as the Ancient Briton, and this variety is very superior on our land to any other that we have tried. The fruit on the Snyder ripens earlier, but the plants do not produce more than a third as much as the Briton. Stone's Hardy has been so very unsatisfactory on our land that we have taken up and thrown away all the plants of it that we had formerly growing here.

SEEDLING RASPBERRIES. About six years ago we raised some 700 seedlings from the Schaffer's Colossal raspberry, and among them we find varieties with red, purple and black fruit, and some that increase by suckers from the root, but most of them increase by tip layers. This seems to verify what has been believed for many years by the best botanists,—that Schaffer's Colossal, and probably the Columbian and similar berries, are the result of hybridization between the red and black raspberries. These seedlings have all been thrown away except about sixteen kinds, which are now being tested on a larger scale, with the idea of determining whether they are worth sending out for distribution.

We also have about one hundred seedlings from the Marlborough, and about one hundred choice red sorts of raspberries, which ought to fruit next year.

CURRANTS.—Among these we have little of special interest to report at this time. The varieties recommended by our State Horticultural Society, including the Red Dutch, Victoria, Stewart's Seedling, of the red sorts, and White Grape, of the white sorts, are kinds that have proven most valuable here. Injury from the currant worm has been common with us for eight or nine years, but it is as easy to destroy it as it is to destroy the potato bug by the use of Paris green or by white hellebore. The currant borer has not been as numerous the past two years as for several years previous to that time, when they were exceedingly abundant.

GOOSEBERRIES.—Among these we find that the Houghton and the Downing of the older varieties still hold their own, and the only new rival for popular favor, judging from our experience, is the Champion, which is a strong-growing, vigorous variety with large fruit. The Pearl seems to be another Downing. Columbus seems to be doing the best of the large fruiting sorts, but there are none of these large fruiting sorts that do especially well with us. The list of this class which we have tried and found to be of little value includes the Triumph, Puyallup, Mammoth, Red Jacket, Chatauqua, Orange, Strubler's Early, Industry, Crown Bob, Whitesmith. We have fruited perhaps 200 seedlings within two years, and have propagated a few of the best of them for distribution. Most of these are seedlings from the Downing, and some of them very closely resemble the parent.

DEWBERRY. We have never succeeded in fruiting the dewberry except in but one season, which was in the dry year of 1894, when it yielded far better than any of our blackberries. We have grown Austin's Improved, Windom, Bartell's Mammoth and Lucretia, but have found none of them reliable. All of them would flower well in the spring, but they failed to set fruit. At one time it was recommended to set dewberries near to the blackberries, as it was believed by some of our horticulturists that

cross-fertilization with the blackberry might aid them in setting fruit. We have experimented with this in planting the dewberries and blackberries in parallel rows, but without getting any material increase in the results obtained. Our experience seems to show that they are exceedingly unreliable on our soil.

GRAPES. This year, one vineyard was destroyed to make room for the new Horticultural Building, but in anticipation of the necessity of destroying this vineyard, we started, four years ago, a new vineyard in the garden, which bore fruit this year for the first time, and made a most satisfactory growth. This vineyard would probably have fruited two years ago, were it not for the fact that it was nearly destroyed by the winter of 1896, which was so very severe on grape vines, and which resulted in destroying most of the varieties which were young at that time. This vineyard contains about 20 varieties, including our hardiest and most desirable kinds. This year, Campbell's Early fruited for the first time, and appears to be a very promising variety. Beta is a very hardy variety, which originated with Andrew Suelter, of Waconia, Minn., and which for many years has been grown in a small way in that section, and found to be exceedingly hardy, and able to stand fully exposed through some of our most severe winters. We are propagating this sort for distribution as a premium for the Horticultural Society. I regard it as fully as good in quality of fruit as the Janesville, rather more productive and perhaps hardier. The old vineyard, located near the farmhouse, and which was planted in 1886, produced a very good crop of fruit this year. The early frost in September hurt the fruit of some of the varieties, and they did not ripen as satisfactorily as generally in former years; but such sorts as Worden, Moore's Early and Agawam ripened perfectly. We have about 50 grape seedlings, some of which fruited this year; and one of them seems to be of especial value, and will be propagated for further trial.

Among the native fruits, Success Juneberry has been very productive at the Station for six or more years. While the birds are very fond of this fruit, and generally get their full share, yet it is well worth growing, for it is perfectly hardy, very productive, and the fruit is desirable. It is nearly the same thing as the old service berry, but is far more reliable and productive.

The buffalo berry is a wild fruit that it seems to me we have not paid quite enough attention to. Our experience with it at the Station began by obtaining a few plants from South Dakota in 1887. These plants flowered in 1889, and all were found to be staminate. About two years later we succeeded in obtaining one large pistillate tree, which has fruited every year since then. About this same time, several quarts of fruit were obtained from North Dakota, the seed from which produced a large number of plants, and since these have come into bearing we have had considerable of this fruit each year. We have found the fruit to vary considerably in size, and also in the season of ripening, some of it being apparently ripe about the middle of August, and other trees producing fruit which would hold on into the winter. A peculiarity of this fruit is that frost seems to improve the quality of it much in the same way as frost affects the persimmon. We have had, perhaps, a bushel and a half of fruit the past year. We find that the seed grows easily when mixed with sand and kept frozen over winter. In 1898 we raised about 6,000 plants in a bed six feet wide

and 24 feet long. We find that these small seedlings move very easily indeed, but the old plants, especially those from suckers, are apt to be very slow in starting to grow. The plants generally have fruit buds when three years old, and it is a very easy matter to determine the pistillate from the staminate plants from the shape and general appearance of the buds. This makes it practicable for the nurseryman to send out one or two staminate plants in each dozen of pistillate plants, which I think will be sufficient proportion to fertilize all the fruit if they are planted in groups. The points which especially recommend this berry are its great hardiness, produc-

TWIGS OF THE TWO FORMS OF THE BUFFALO BERRY.

1. Twig fron male plant showing the large rounded buds. 2. Twig from female plant showing the rather pear shaped buds of this form. By a little study of this matter, it will be found quite easy to separate the plants into their two forms, which is very desirable for planters.

tiveness, and reliability; and while it will probably never be very popular in the section of the state where currants are grown, yet for the more severe portions of this state and the Dakotas it has undoubtedly great value. On almost every farm 100 feet of row of this plant would be found valuable. The fruit makes an excellent sauce, and a jelly fully as good as currant. The plant is ornamental, and makes a pretty dwarf hedge and stands pruning well.

FORESTRY. The experiments with the various trees at the Station have now been continued for a period of about 15 years. Our present forest plantation, which consists of five acres, was started in 1889. It now consists of about 40 species and varieties of trees, representing practically all the kinds of probable value in this section. In the older portion, the trees have made a very fine growth, and we are beginning to get forest conditions, and to get an idea of the possibilities of growth with trees on our land. We have raised seedlings of many kinds of trees, especially those which are somewhat rare, or not generally propagated, such as Hackberry, Red Cedar and Basswood. In order to supplement the work at Central Experiment Station, we have planted out at Coteau Farm, which is located in the dryest portion of this state, in Lyons county, twenty plats of trees of different mixtures, including, in all, some 40 species and varieties of trees, to determine their value in that section of the state. The most of this

PORTION OF OUR FOREST PLANTATION AT THE EXPERIMENT STATION.

plantation is now six years old. It has made a very satisfactory growth, and is an object lesson that attracts much attention in the section in which it is located. The land in Lyons county is made up of rolling prairie, and there is a scant rainfall. The difficulty in growing trees there we have found to be chiefly in getting a windbreak established, after which many kinds of trees could be grown under its protection which otherwise could not live there. We have, for instance, had the earth blown away from seedlings that were exposed until they stood fully five or six inches out of the ground. The plan followed here has been to mulch the windbreak when first planted, and to continue the mulching process with the windbreak. Inside of this windbreak we have followed clean cultivation, setting the trees two feet apart in rows eight feet apart, and keeping the soil cultivated with an ordinary garden cultivator. This is probably the best way for the general care of windbreaks and shelter belts in such sections. In this section we have found even the White Spruce and the Scotch Pine unable to withstand the severe conditions there existing unless a windbreak was first formed, after which, however, they seemed to thrive. This has also been the case with our hardier plums in this section. Where they have been planted on open prairie they have generally failed; but where they have been planted under the lee of a good windbreak, they have generally done well.

The insects that have been especially hurtful to our forestry trees have been the saw fly larvæ on willows and various other foliage eating insects.

The saw fly on willows we have been successful in checking by use of Paris green and water sprayed on the foliage by a spray pump. In case of infested trees over twenty feet high they should be shortened, and then by using a spray pump in a wagon and long pieces of hose held up by means of bamboo poles twelve feet long the tops may be reached. For the tent caterpillar the same remedy is good, but should be commenced as soon as the young hatch out.

During the last two years our lawns have been seriously injured in summer by the larvae of the May beetle. These grub worms eat the roots of

SEEDLING PLUMS IN FRUIT AT THE FOREST PLANTATION OF COTEAU FARM SUB-EXPERIMENT STATION.

These seedling plum trees were used in some of the plats as secondary trees, and have borne well and given good shade.

the grass so that the top dries out and can be raked up in piles, as the plants lie only on the top of the ground. We know of no satisfactory remedy for this pest. The grub worms probably remain in the soil for at least three years, and it is probable that they do the most injury in their third year. The best treatment seems to be to spade up the infested portion in the fall and seed down early in spring.

The following shows the condition of some trees and shrubs of special interest on our grounds last spring. Ampelopsis veitchii, Ampelopsis cuspi-

data, Spirea thunbergii, Tamarix amurensis, Pyrus betulifolia, Cornus officinalis, Pyrus sanguinea, Quercus pedunculata, Chestnut Oak, Philadelphus speciosum, Celtus tournefolia, Celtis andibertiana, Symphoriocarpus racemosus, Spear Elderberry, Polish privet (probably Ligustrum ibota), Exochorda grandifolia, Spirea crataegifolia, Spirea Van Houtii, Rhamuns alpina and Lonicera albertii were frequently killed to the snow line. Abies concolor was severely injured down to the snow line but not killed back.

The following specimens were lost entirely: Hydrangea Japonica, Viburnum tomentosa, Comptonia asplenifolia, Lonicera ledebouri and Judas tree.

The following shrubs are of special interest from the fact that they have been newly introduced and have proven perfectly hardy:

Japan Lilac (Syringa Japonica). Small trees about ten feet high and exceedingly vigorous, starting from their terminal buds and producing loose, graceful clusters of cream-colored flowers, often fourteen inches long and nearly as wide, very conspicuous. Is a long time in coming into flower.

Lonicera marrowii and L. standishii are much alike and seem perfectly hardy. They are bush honeysuckles of good habit and free flowering.

Crataegus glandulosa, C. prinnatifida and C. microcarpa came through the winter in best condition and flowered abundantly.

Ribes triste is a dwarf currant that seldom gets over two and one-half feet high, and has a pretty compact habit and bright glossy leaves that appear early and remain on until late in autumn. Its flowers are rather inconspicuous, and its fruit is of no value. As an ornamental plant for division lines between city lots and for similar purposes it promises to prove valuable. It was not injured in the least by the last winter. It grows easily from cuttings.

By the severe weather of last winter many of the more tender varieties of plums were injured. Many of these varieties are new to us here, and we have never fruited them, so we cannot be sure that they are true to name. But in every case much care has been taken to obtain reliable stock, and it is fair to assume for the purposes of a preliminary report that they are correctly named, especially where this data is supported by other evidence: Hungarian Prune, Communia and Yellow Aubert top-worked on Prunus Americana stocks about four feet from the ground were all of them very severely injured and killed back very much. They had made good large heads and had rather outgrown the stock.

Col. Wilder, Sophia, Gold, Robinson, Wilson, Hilltop, Taige, Milton, Lombard, Charles Downing, Wayland and Prunus davidiana killed to the snow line.

A few trees of a blue plum that were given to the Station by Mr. T. T. Lyon, who regarded it as hardy, practically killed out entirely. This variety had fruited for a number of years in Minneapolis and appeared exceedingly promising.

The Japan plum, known as Ogon, started from near the terminal buds, but made a very weak growth. I regard it as of no value for this section.

Budd and Missouri apricots killed out entirely. Seedling cherries grown from seed imported from Riga, Russia, in 1891, that had made good, bushy trees, twelve feet high, killed out entirely.

EUREKA TRIAL STATION.

C. W. SAMPSON, SUPT.

The grape vines and small fruit plants came through the winter in excellent condition, owing to the extra protection by the heavy snow fall. Several of my new varieties fruited this season, among them Campbell's Early, which was very fine. It is a very strong, vigorous, hardy vine, with thick, healthy, mildew-resisting foliage, and perfect, self-fertilizing blossoms. Clusters very large, usually shouldered, compact and handsome, without being unduly crowded. Berries are large, nearly round, often an inch or more in diameter. Flavor rich and sweet, with no foxiness or unpleasant acidity, from the skin to the center. It ripened about with Moore's Early, Aug. 25th.

Early Ohio also fruited the second time with me. Its berries are small and round; skin thin; purple with a blue bloom; flesh tender, melting, without pulp, and good; ripens early, about Sept. 1st, with me.

Moore's Early is another very valuable grape for Minnesota. Bunch smaller than Concord, of which it is a seedling; rarely shouldered, but berries somewhat larger. It is generally as healthy and hardy as its parents, though not as productive or vigorous. It ripens ten days to two weeks earlier than Concord, though not quite equal in quality. Its large size and earliness render it desirable and make it a popular market grape. It needs careful cultivation and liberal manuring, being better than Hartford, Champion or Talman, and quite as early. It is recommended to supersede these undesirable varieties. Moore's Early is ripe and ready to put on the market Aug. 20 to 25 each year.

Brighton. This handsome and fine grape is a cross of the Concord and Diana-Hamburg. Vine hardy, a rapid and vigorous grower; leaves large, thick, dark green; very productive; if the small bunches were taken off early in the season, it would be a great benefit to the others. Sometimes, however, its flowers do not fertilize, though abundantly blooming. It should, therefore, be mingled with other varieties growing close by, which have the same time of blooming. I have several other varieties which will fruit the first time the coming season.

All varieties of plums, including De Soto, Forest Garden, Weaver, Cheney, Wolf, Rollingstone, Hawkeye, Aitkin and Gaylord. The Cheney and Aitkin were attacked by the curculio so badly that I failed to raise any good fruit on them. The Compass Cherry fruited very abundantly on trees of only one year's growth. The University apple came through the winter in perfect condition, the terminal buds being perfectly sound and the wood bright and not the least discolored.

EXCELSIOR TRIAL STATION.

H. M. LYMAN, SUPT.

Apple trees at this station have made a good growth this past season, but have produced little fruit. Was the scarcity of fruit owing to the cold previous winter? I think that could not have been the cause, for the very hardiest varieties seemed as unproductive as the more tender ones. This fall here has been very favorable in preparing the fruit trees for a Minnesota winter. It has been like the one a year ago in moistening the ground and ripening the wood, and if we do not have more than two or three weeks

of extremely dry cold 40° below zero weather at one time, our hardy Minnesota trees will come through all right. My observation is that newly set, well cultivated trees that made a good vigorous growth with well ripened wood, passed through the last winter in much better condition than those that were set in uncultivated ground and made little growth. They had the vitality in themselves to withstand the rigors of the winter.

I do not think very much of the Longfield. It is subject to blight and is more tender than most of the Russians, though I would not discard it from the orchard, for it is an early bearer and very good in quality, though, doubtless, a short-lived tree. I am growing more in favor of the McMahon. I think it is hardier than the Kaump.

Trees have blighted little the past summer about here; none at the station, except a few trees in the nursery rows of the Lowland Raspberry, Longfield, Whitney and Charlamoff. I have added a few varieties to the orchard this summer: Patten's 102, Iowa Beauty and Compass Cherry. They are all doing well. The cherry is a vigorous grower. The Northwestern Greening has passed through three winters with me, and still looks well, with well ripened wood, and will stay with us if we have no more trying seasons for it than the past fourteen have been.

My Prolific crab tree is holding its own well, though not fruiting as heavily this year as usual. Plum trees were loaded with fruit with the exception of the Cheney, which with me has been an unprofitable bearer on account of the curculio and plum pockets. I will mention that while in some parts of the country apple trees suffered much from root-killing, here they were so well protected by snow there was no trouble from that cause.

LA CRESCENT TRIAL STATION.

J. S. HARRIS, SUPT.

The last winter (1898-9) here was noted for its light snow fall, a number of extremely cold days and nights in February, following a warm period that had taken off the little snow that had previously fallen, and was in many localities disastrous to trees and plants, both through root-killing and injury to the tops. The trees generally entered the winter in good condition, with wood well-ripened and apparently with sufficient moisture in the soil to prevent injury to the roots.

The larger portion (two-thirds) of the trees in this station are planted on land sloping towards the north and northeast, but a small portion (one-third), on land sloping south and southeast. With rare exceptions no injury occurred to the roots of trees on the northerly slopes and but little injury to the tops, and this was confined to a few named varieties and a considerable number of seedlings yet unnamed. The varieties perceptibly injured are Roman Stem, Sweet Pipka, Stepka, Miller's Gennetin, Wolf River (slightly), Sklonka, one Boydonoff, (three Boydonoff unharmed), Repka from J. L. Budd, Dabold Seedling, Bates' Sweet, Ratsburg, Walbridge, Haas and Giant Swaar. On the southerly slope several old trees of Duchess of Oldenburg were so badly injured in the roots that they have since died, and Whitney No. 20, McMahon, Munn, Red Astrachan, Walbridge and Haas were very seriously injured in the trunks and tops, and the Utter slightly; also the Fameuse and Wealthy were injured in the trunks, but not in the smaller branches.

Blight has been unusually severe, and few trees have escaped. The Hibernal, Virginia crab and Wolf River have blighted badly, and some blight is seen on Patten's Greening and Peerless. The apple crop was light, of rather poor quality, and ripened so early that winter varieties would not keep well.

All trees except those badly injured in the tops have ripened up their season's growth well and are well supplied with fruit buds, but during the very warm weather of late October the buds have swollen considerably. Trees that were considerably injured in the tops are filled with immature shoots that are likely to be killed back during this coming winter. The ground at the present date is very dry about the roots, and should winter set in without rains or an ample covering of snow there will be great danger of severe root-killing.

A few experiments of top-working on stocks of uncertain hardiness and blighting propensities have resulted in failure, as the trunks blight and winter-kill below the grafts, and the tops have shown more tendency to blight where put upon bad blighting kinds.

A few experiments in girdling have not brought satisfactory results, and we cannot advise its practice only for the purpose of bringing seedlings or unknown varieties into earlier bearing, in order to get some idea of the quality of their fruit. The girdling is a tax or shock on the trunk or root of the tree below the point of girdling, and does not conduce to permanent fruitfulness, unless repeated about every second year, and tends to invite insects, blight and premature death. The fruit is hastened in maturity, liable to drop prematurely, and will not keep as long as fruit grown on healthy ungirdled trees.

Our best raspberries this year were the Loudon and Red King, in reds; and the Older, in black.

The Pomona currant is very promising, is a free grower and liberal fruiter. We have this year added to our collection the Wilder and Red Cross.

In gooseberries, the Houghton, Red Jacket and Pearl endured the last winter the best. The Downing was considerably injured, and the Queen, Champion and Triumph were killed outright.

All varieties of the native plum (P. Americana) appeared to endure the winter without injury, but the Oxford, Aitkin and Cheney blossomed so early that they were not pollenized, and the fruit nearly all turned to plum pockets. Among the very best and most reliable for fruit are the De Soto, Rollingstone, Cotterell, Wyant, Gaylord and Stoddard.

The cherry crop was nearly a failure this year, although the trees do not appear to have been seriously injured.

Nearly all yearling apple trees in the nursery were considerably discolored; also many of the two-year-olds, and the Ben Davis were killed down nearly to the ground. The Springdale is proving too tender for this climate; besides the trees are inclined to bark-burst near the surface of the ground.

Present indications are that a considerable number of the newer Northwestern seedlings will prove hardy enough for planting in all favorable locations. The Russian, Red Wine, Juicy White, Sklonka, Skrout, German, Sweet Pipka, 30m, 1056, 224, Holdfast, Ostrehoe and some others do not appear to be worthy of any further trial.

MINNESOTA CITY TRIAL STATION.

O. M. LORD, SUPT.

Among the strawberries that gave the best results were, in the order named, Bederwood, Warfield, Mary, Gardner, Dayton, Capt. Jack and Crescent.

Plants have made a good growth and will go into the winter in good shape. Red raspberries were not laid down, and were injured more or less by the winter. The Loudon suffered less than other varieties. The Turner was partly killed and the Cuthbert mostly all killed. The Shaffer and Columbian unhurt. Black raspberries, especially the Palmer, were unhurt, but blackberries where unprotected were all killed. Where they were properly covered they yielded a fair crop of fruit.

All varieties of currants bore a large, fine crop. Gooseberries were unusually affected with mildew; the Pearl appeared to be the nearest perfect.

Grapes. The Iona, Moore's Early, Worden, Lindley, Massasoit, Agawam and Delaware bore no fruit. A few Concords fruited, but were inferior in quality. Native plums, the main specialty of this station, produced a large crop again this year. All of the old standard varieties bore well. Some of the newer ones on trial bore for the first time here. The Gable, from Storm Lake, Iowa; the Hunt, from W. H. Guilford, Dubuque; the Wragg, from Edson Gaylord, Iowa; the Bursoto, from Mr. Williams, Nebraska, were among the most desirable. Though fifteen varieties of Domestica were entirely killed, and some of the Japans much injured, a further trial of some of these kinds will be made, to experiment with them in the direction of cropping. If we can succeed in perfecting something of the quality or character of the commercial prune from some of our natives, it will be of great help to our fruit interests.

MEADOW VALE HORTICULTURAL CLUB EXPERIMENT GROUNDS.

A. W. KEAYS, SUPT., ELK RIVER.

The winter of 1898 and 1899 did very little damage in this trial station, the ground being partly covered with snow, the hills only being bare. We have learned some valuable lessons, however. Among 150 varieties of apples on trial, the Peerless seemed to have killed back the most and Longfield next. The Longfield started out a new growth and does not appear to have been injured only in the ends of the limbs. I will say that our grounds are in a very exposed place. We had a number of seedlings root-killed, which proved that they are not hardy enough for our severe winters.

In the spring of 1896 I root-grafted several varieties of apples on Transcendent crab roots. In the fall of 1898 some of those were as large as the trees from which the scions were taken, those being then five years old. Those grafts were in bloom in the spring of 1899, while the old trees from which the scions were taken have not bloomed yet. Some of those root-grafts have been placed on trial in other places. I am satisfied this way of propagating will make a hardier tree and come into bearing sooner. Longfield was in bloom in this lot and killed back on Pyrus malus roots. There are old Transcendent trees in this vicinity that have been planted over 30 years and are bearing as high as twenty-seven bushels of apples

each year. Some of those trees are in a perfectly healthy condition. They were on their own roots.

I have not found one tree of American wild crab (Pyrus ioensis) injured in the least; they were in bloom and fruited in the fall of 1899. This grows wild here and seems to be hardier than they are farther south. I have a number of small trees and some just commencing to bear, and I intend to try some experiments with them, which I will report later.

In the spring of 1898 I planted seed of several varieties of our hardy, half hardy and tender varieties of apples. These were planted in sections in an exposed situation. In the spring of 1899 some of the kinds were entirely killed, while others were in good condition and made a fine growth the past summer. The minimum temperature the past winter was —42°. From January 27 until February 12 the temperature did not rise above zero.

Among the new fruits originated here is a very valuable seedling blackberry and two plums; one that is very fine for eating and one for cooking. One of these seems to be proof against the curculio.

OWATONNA TRIAL STATION.

E. H. S. DARTT, SUPT.

The Owatonna tree station was established by the legislature for the purpose of testing fruit, forest and ornamental trees. I started in under rather adverse circumstances. I was to run the tree station, but I had no compass to guide me, nothing as a precedent, and I had to depend entirely upon my own resources, or I might say intelligence, in conducting the work of the station, and although I was under the control of the superintendent of the farm school, yet my instructions were to use my best judgment, and I have done so. I have not had any instructions, but managed the station as in my judgment seemed best. I secured from the growers all over the country their best and hardiest varieties to the extent of two or three hundred varieties. I planted seeds of the Quaker Beauty and Minnesota crabs, and I have grafted each year by selecting the most promising of these seedlings, so that now I have grafted in the neighborhood of five hundred varieties, and have them growing and numbered.

I succeeded by girdling in exhibiting one hundred and fifty varieties of apples at the state fair. A good many of them were rather small and perhaps of no account, but in selecting those small apples I generally select keepers, and a good many of us know that the small apples are likely to increase in size as time advances. I understood a man to say that the first Wealthy apples were only of medium size, and some of the small varieties I girdled last year, and which were placed on the crab list this season, I was obliged to put on the apple list on account of their increased size, and I believe it is safe to conclude that those which are brought into bearing by girdling will have larger apples in the future than they have now.

It has been suggested that I have a great lot of trash at the tree station I should get rid of. I probably destroy hundreds of varieties every year. It is known that in a lot of seedlings perhaps hundreds will not be very valuable. I am thinning them out as fast as I can by girdling, and it will still take a long time to find out whether there is an apple at the station that is very valuable. I have great faith in a number of varieties; but my report is intended to cover that ground. I simply thought I would preface it by turning your thoughts in the right direction.

At the beginning of the year there were growing on the station fully one thousand varieties of grafted apples, and about the same number of varieties are growing at the present time. Of these about two hundred are Russian varieties, about three hundred are seedlings contributed by growers of the cold northwest from their hardiest stock, and the remainder have originated on the station, being grown from seeds of our best apples and crabs.

It has been my custom to carefully survey the field each fall and select the most promising varieties for grafting the following winter. One hundred and fifty-six varieties were grafted last winter, and about the same number of varieties will be grafted this winter.

Our last winter, though severely cold, was not a test winter. Very little harm was done except by root-killing, and that only occurred where our light covering of snow was blown off. About forty orchard trees were thus killed and the most of the root grafts set in the spring of 1898. By the side of the winter of 1884-5, our last winter was a tame affair. On the former occasion 800 Wealthy trees in one orchard were killed to the ground. Last winter the Wealthy, Haas, Ben Davis, and many others of that grade of hardiness escaped material injury. We talk about hardy roots, but root-killing when it has occurred on the station has made a clean sweep, taking apples and crabs alike.

Far the most interesting and important experiment that I have tried is that of girdling fruit trees to produce early bearing and test hardiness. This I have practiced on a large scale, having girdled thousands of trees. Death is always the result of injury, and the amount of injury that a tree or animal can receive and still live is the true test of hardiness or tenacity of life. Certain kinds of injury invite the attack of certain diseases, and the interference with the flow of sap, which is the great promoter and protector of plant life, makes the girdled tree especially susceptible to sun scald, bark blight, and, perhaps, to many other diseases of which we know nothing. When the tree doctor knows half as much as the man doctor pretends to know we may have a long list of tree diseases with remedies as infallible as the patent medicines that cure all the diseases that flesh is heir to. Girdling makes the young tree prematurely old, brings out all its latent defects, and if persistently followed up only permits the survival of the fittest. It seems poison to some varieties while entirely harmless to others. Two trees of Tetofsky seed No. 3 that have been girdled three years in succession are now in fine condition and well loaded with fruit buds, while two trees of Tetofsky seed No. 4, standing near, were both killed—bark blight starting in at the wound and extending entirely around the tree. Okabena seed No. 1, which bears a small winter apple,—may get larger—has been girdled

for four years in succession, and is now in healthy condition, while Richland Winter always kills with one girdling. No variety having a good reputation for hardiness and not subject to bark blight has been permanently injured by a reasonable amount of seasonable girdling.

The manner of girdling is not very essential so long as the cambium layer is cut through entirely around the tree. Girdling by the spiral method, which seems least harmful, is accomplished by starting in with a saw just below the limb and cutting down around the tree at an angle of forty-five degrees. On small trees and limbs a knife may be used. I have used pruning shears to advantage. I now use the tree girdler made on the principal of shears. The blades are four or five inches long bent in a little at the ends to hook on to the tree. The handles are like those of blacksmith's tongs; the blades are sharp and if bent an inch or two apart at the ends trees may be girdled spirally in a very expeditious manner. Since trees may be expected to bear the next season after the girdling is done, it follows that if we remove the fruit from part of our orchard trees and girdle, we may reasonably expect the girdled trees to fruit the following season. May we not in this way bridge over the off year? Much girdling was done in 1898, and in 1899, in spite of tramps, hoodlums, the hard winter and the off year, I was able to exhibit at our state fair over 150 varieties, several of which were new seedling apples of great promise. For this latitude I think the first of July about the best time to girdle. If it is done too early, the wounds heal over quickly without results, if too late, there will be greater danger of permanent injury. On young trees thus forced into bearing, the apples are likely to be considerably below the natural size. We have no way of distinguishing the apple from the crab except by size, and I am pleased to note that some varieties that I placed in the crab list last year I am obliged to transfer to the apple list this year on account of increased size. If this increase shall be maintained we may reasonably expect many good sized apples to develop from our very large crab list. Mr. Gideon claimed that the Wealthy was the product of Cherry crab seed, and I have some good sized apples growing where crab seed was planted. It has been my custom to regraft the most promising new varieties each year, so that if any proved valuable I would have scions for distribution, and I am pleased to say that I have scions of this class now ready for our Minnesota experimenters and nurserymen.

SAUK RAPIDS TRIAL STATION.

MRS. JENNIE STAGER, SUPT.

Although this year was a good year for growing fruit, it was not a good year for ripening here. We planted about three hundred fruit trees, also some butternut trees, and they grew nicely, but this fall the warm weather has caused the most of them to begin to bud out, which I am afraid will weaken them or perhaps even kill them. Grapes fruited heavily, but with the exception of some early varieties none ripened.

The Scotch pine seedlings you sent a few years ago are many of them over six feet high, while the Colorado blue spruce are not two feet high.

Turner raspberries are very large and fine here, and the Yellow Queen has as large a berry as the Cuthbert and of a nice flavor.

Small fruits, with the exception of strawberries, did very poorly here this year, as the vines were weakened on account of losing their leaves

through the ravages of the worms last year. But all vines and bushes made an exceptionally strong growth this year, so we live in hopes of a large harvest next time.

WINDOM TRIAL STATION.

DEWAIN COOK, SUPT.

Strawberries were a fair crop, though the late berries did not seem to be perfectly fertilized. I am favorably impressed with the Bederwood for a home and near-by market berry. It should not be planted on too rich soil, in sheltered places, as in such places it is often too soft to handle, but where grown in not very rich soil and where there is a free circulation of air the berries are firmer and of a better color.

Dwarf Juneberries, as usual, bore a heavy crop, and we found a quick sale for them at five cents per box.

Currants were only a fair crop, Long Bunch Holland doing a little the best. Cheap strawberries and raspberries have had a tendency to crowd out the currants. We brought the price of currants down to six cents per box, at which price they sold readily.

My sand cherry bushes bore heavily, but the fruit about all rotted on the bushes. Unless the sand cherry does better in the future, we will have to consider them of no value.

As but few apple trees bore anything, I can report but little of value about them. With few exceptions my apple trees made a fine growth the past season, and my apple orchards are looking better now than ever before. A couple of bearing Wealthy trees that looked sickly and made but feeble growth this season, dropped their leaves early and are very full of extra well developed fruit buds. I have noticed that any not fatal root injury by cold to bearing apple trees will set them to bearing extraordinary crops after the first year is past. In this section, on the high prairie, where blight and sun scald is not as prevalent as in some other localities, the orchards that have the benefit of windbreaks are doing the best; in fact, there are no orchards where there is a full exposure to the northwest winds, as the trees always kill out the first or second winter after planting.

We have had lots of experience with plums the past season. I believe that we have all the tent caterpillars exterminated that were on the place, and we have been making a vigorous fight against the borers, that had got a strong foothold here. We cut out or made firewood of the trees that were infested the most; the other trees we examined each one, and got after each individual borer with a jackknife early in the autumn, and a few days later went over each tree again, getting a few that were missed the first time. We think that by keeping up the fight another season that we can eradicate the borers. The plum is the only tree troubled by them.

The gouger and curculio are increasing in numbers and destructiveness each season. We are again to resort to the jarring process next season. We are not going to be beaten by them. We gathered and destroyed all of the down plums this season, which, of course, destroyed many larvæ of curculio. We have also cut out all of our wild plum trees, also a good many of the inferior named varieties. It seems that the gouger especially breeds almost entirely in those small plums that have a large pit, while those large plums, like the Wolf, that have small pits are rarely attacked by them.

The plum rot is another very destructive enemy that we have to contend with. Some of the wild plums were entirely destroyed by the rot, no kind being entirely exempt. We have gathered all of the dried mummyfied plums, and as yet we know of no other way of fighting this pest.

As to varieties for market, I believe the Wolf (freestone) takes the lead. Year after year it excels the De Soto in bearing, in size and in selling qualties, and the tree seems to be just as good. The Hawkeye, Black Hawk, Wyant and New Ulm are also the best of sellers as well as good bearers. These, with the Wolf, sold here at $2.00 per bushel; the De Soto, Spree, Rollingstone, Wood and a few others sold at $1.50 per bushel. The Cheney did better than usual, yet we got no good plums from them, although we have a dozen or so bearing trees of them, as well as a lot of other trees of other varieties of that class. They seem to set fruit very well, which grows very rapidly early in the season, what escapes the plum pocket and is not claimed by the curculio and rot. As they get large so early they seem to about quit growing several weeks before they ripen, and they furnish an ideal breeding place for the curculio. We have had the Cheney bearing quite a number of years, but we have never had any of the fruit that we could use, or any of the fruit to sell. If we had no curculio I think we might grow the Cheney for cooking purposes.

One lesson that I have thoroughly learned the season just passed is this: that when the plum trees get to bearing size, it will not do to plow among the trees. While it does no injury to the trees it reduces the size of the fruit, and may destroy the crop, mulching with manure being a much better way.

I am also of the opinion that plowing close to the apple trees retards their bearing or reduces the crop.

In closing this report I will say that I have made very good headway in the last two years in making this station an object lesson to all visitors, not only in growing fruit but in the way of ornamentals as well. Of the Rocky Mountain and other evergreens and ornamental shrubbery sent me from the central station last spring all grew except one silver cedar, and are now looking first rate.

I think there is enough moisture in the ground to carry trees through the winter all right.

The new railroad town of Jeffers is only three miles from this station.

NORTHEASTERN IOWA HORTICULTURAL SOCITEY, ANNUAL MEETING, 1899.

W. B. FRYER, DELEGATE, MANTORVILLE.

Your delegate to the Northeastern Iowa Society arrived at Cresco at 2 p. m. Tuesday, just in time to take a drive with the other members of the society about the city and out to the nursery of Upton Bros. Trees at this nursery seemed to be in fair condition, and no signs of root-killing.

Thursday forenoon we were driven out to the nursery of Mr. Mitchell, the home of the Red Warrior, Cresco, etc. The only root-killing at this place was a few one-year trees on exposed elevation. Some varieties were quite badly discolored, but all hardy varieties were in good condition.

The Red Warrior is a very thrifty grower, and one-year trees were on exhibition that were well rooted on the scion. Cresco is the county seat of

Howard county and has a population of about 3,000. In our drives through the town we noticed many well kept yards and pretty hedges.

Wednesday evening the citizens of Cresco gave a creditable entertainment, consisting of vocal and instrumental music and short speeches.

The meetings were fairly well attended, but the farmers of the immediate vicinity were conspicuous by their absence.

Prof. Green, of the state society, exhibited some interesting maps showing the elevation, rainfall, temperature etc., of different sections of the state, and its effect on different varieties of fruit trees; also maps showing the number of apple, pear, peach, cherry and plum trees grown in each county.

The members from the central and southern part of the state had a sad story to tell of the root-killing of trees last winter. Mr. Guilford, of Dubuque, reported the loss of about 50,000 young trees, seedling grape vines, etc. Blackberries, grapes, peonies and tulips were killed. Elm seedlings were so badly injured that when transplanted they failed to grow. Wild plums and grapes in exposed locations were badly injured. All plums on Myrobalan are dead and on Marianna nearly as bad. Those on their own roots and on Americana are generally in good condition. Virginia stood the test the best in the nursery and Whitney next. (This was in Mr. Guilford's district.)

Elmer Reeves, of Waverly, reported the loss of nearly 70,000 young trees, etc. Prof. Greene estimates that nearly 700,000 trees were destroyed the past winter in Iowa. When the snow stayed on the ground or trees and plants were mulched, they were generally in good condition. E. H. S. Dartt, of Owatonna, and A. J. Philips, of Wisconsin, were there and poked fun at each other as usual. Hon. Geo. H. Van Houten gave an hour's talk on the Hawaiian Islands, describing the habits of the nation, soil, climate, etc.

C. G. Patten read a paper on root-killing. He would save seed of Whitney and Briar Sweet to raise seedlings, and use a piece of root two and one-half inches long, and scions about six or seven inches in length. Some talk of planting more Virginia and top-working trees.

Iowa Falls was selected as the place for the next meeting, and C. F. Gardner, of Osage, was re-elected president; Elmer Reeves, of Waverly, vice-president; C. H. True, of Edgewood, secretary; and G. A. Ivans, of Iowa Falls, treasurer.

NORTHWESTERN IOWA HORTICULTURAL SOCIETY, ANNUAL MEETING. 1899.

JOSEPH WOOD, DELEGATE, WINDOM.

Having been sent as a delegate to the Northwestern Iowa Horticultural Society, at Spencer, Ia., I arrived the 4th of December. The next day was the opening of the meeting, but only a few members were present, and there was no work done that day till in the evening. The president and secretary did not arrive until the evening of the 5th.

We had an evening session, and Prof. N. E. Hansen, of North Dakota, spoke for a short time on root-killing. He was compelled to leave for Minnesota to attend the horticultural society meeting in session at Minneapolis, and, therefore, his remarks were too brief to suit us. Mr. Hansen thought that after last winter's experience the right thing to do to avoid wholesale root-killing during severe winters is to import Siberian crab seed, or obtain

the seed from parties growing the Siberian crab here, and to plant the same, and from the seedling's obtain stock for grafting purposes.

The following day in the morning, Prof. John Craig, of the Iowa State Experiment farm, took up the same subject of root-killing. His belief was the same as Prof. Hansen's, but he thought we could overcome a good deal of root-killing by using short roots and long scions and mulching in the winter. To prove this Mr. Craig had samples of trees to show the difference between short and long roots. The short root was dead, and the tree had formed roots on itself, whereas on long roots, both tree and root were dead.

In the evening Prof. Craig spoke about hybridizing, showing a chart from bud to blossom, and fully explaining how it was done, and what could be accomplished in that line. Mr. Antisdel, of Fostoria, read a paper on "The Dark Side of Berry Culture, and What Varieties to Plant in Northwestern Iowa."

Mr. Felter read a paper on "Grape Growing, Planting, Cultivating, Pruning and Protecting and Best and Hardiest Varieties for the Northwest." Prof. Greene showed different maps of Iowa, of the rainfall, the possibilities of certain kinds of fruit growing by counties, and that outside of these districts it was of no use to try to raise peaches and pears, with the varieties we now have, for commercial purposes.

Dec. 7th, in the forenoon, Mr. Edson Gaylord read a paper on blight. He said there are three different kinds of blight, and described all of them, and instructed how to prevent certain kinds of blight, also a remedy by spraying.

Mr. Pearson spoke on "Plum Growing in the Northwest." He said every farmer ought to have a plum orchard, and by securing the right kind of trees from a reliable nursery and giving them the same care as corn, they would have success. And by getting different varieties, one could extend the plum season for a month and a half. He spoke about growing seedlings from pits of the common wild plum and grafting the largest at one year old with our best cultivated kinds. The best, he said, on his ground were Desoto, Wyant, Wolf and Forest Garden.

Joe Wood, from Windom, Minn., read a paper on plum growing. He said that he was not in the nursery business, but grew fruits for pleasure and home use. He said he had tried most all the known kinds in a small way, and fruited forty varieties this year, and found that if any one wanted to grow plums for market he should cut the list down to about seven or eight varieties. The best and largest on his grounds were De Soto, Wolf, Wood, Wyant, New Ulm, Ocheeda and Rollingstone. But those are not the only good kinds; there are others that may be just as good in different localities. He said there are many good kinds for an amateur to grow, like Hawkeye, Stoddard, Moon, Citey, Black Hawk and others, but only on a small scale.

Mr. F. S. White, of Des Moines, read a good paper on "Growing and Saving Garden and Field Seeds."

In the afternoon of Dec. 7th there was a general discussion of what varieties to recommend for general planting.

Strawberries—Bederwood, Warfield, Crescent were the favorites, but others were mentioned.

Plums—De Soto, Wolf, Wyant, Forest Garden, New Ulm; for Trial, Ocheeda, Hawkeye, Surprise and Stoddard.

Apples—Wealthy seems the favorite. Duchess, Hibernal, Longfield and some of the Russians were recommended.

Grapes—Concord, Moore's Early and Worden; of the red, Brighton and Delaware.

Blackberries—Briton and Snyder.

Next came the election of officers for the coming year:

President—P. S. Kenney.

Vice-President—J. C. Winset.

Secretary—W. B. Chapman.

Treasurer—B. Schontz.

Directors—C. W. Conners, L. A. Clemens, H. L. Felter, A. W. Hatfield, H. N. Antisdel.

IOWA STATE HORICULTURAL SOCIETY, ANNUAL MEETING, 1899.

O. M. LORD, DELEGATE, MINNESOTA CITY.

The annual meeting of the Iowa State Horticultural Society was held at Des Moines, Dec. 12, 13, 14 and 15, 1899.

Your delegate was cordially received, made an honorary member for the year, and invited to take part in the discussions. The reports indicated that the past year had been disastrous and discouraging to the fruit raisers of Iowa, but the display of apples on the table of exhibits was large and fine, showing that even in an off year Iowa has reason to be proud of her productions.

The society voted $300 to meet the expense of a fruit show at the coming Paris Exposition. The president's address recommended teaching young people tree planting and the cultivation of fruit. The secretary's report gave the statistics of fruit damage last winter, showing most damage across the central part of the state, while no part was wholly exempt.

Referring to the president's address, Mr. E. Secor and Prof. Craig discussed the issue of a handbook of nature study for the use of the public schools.

The state is divided into twelve districts, under the supervision of resident directors, who report to the state society. These reports were principally confined to results of last winter's cold, and, incidentally, the prospects of the future. It was notable in these reports that what had been considered the most hardy, like the Oldenburg, had failed with the rest, while the Wealthy and Greenings stood as well as the best. Most of the native plums were unhurt, while southern varieties were killed. Grapes were nearly all killed. The necessities of the society demanded a live correspondent in every township of the state. The opinions expressed hope from the lessons learned, and that they will be of great value in the future, if they lead fruit growers to select the right varieties and soils and locations.

Mr. Trowbride read a paper in which he advocated fall plowing, setting trees twenty-eight feet apart, and for a commercial orchard not more than three varieties. Deep setting, high manuring in the winter and thorough cultivation advised. Deep setting was emphasized by Messrs. Reeves, Wilson, Burnap and Van Houten.

"What Varieties Shall We Plant in the Future?" by Mr. McCoy, advised Rambo, Wealthy, Grimes' Golden and others of first quality, size and color, discarding all inferior sorts.

"True Test of Hardiness," Mr. Mitchell. The only true test was by time and trial.

"The Cultivation of Orchards," provoked a lively discussion, as some claimed them to succeed best when in grass. Mr. Coleman said blue grass would kill an orchard. If grown up to weeds, mow them and leave on the ground. Prof. Craig would cultivate for twenty-five years; shallow cultivation with a cover crop at intervals to be turned under. Clover the best one, oats not desirable.

"Management of Fruit Lands," by C. L. Watrous. Lands must be fertilized. It was formerly supposed that a windbreak on the west and north was necessary, but it is a mistake. Physical condition of the soil very important. Cultivated orchards give best results. Use cover crops that grow quickly and remain green.

Mr. Burnap said dust blanket would not do on drift soils; must have cover crop.

"Why Apples, Plums and Cherries Have Proved Unprofitable in Iowa," R. P. Speer. The cause was unfavorable locations. Unripe trees invited sun-scald; useless to plant where water was wanting; we must supply and conserve moisture to succeed; Russian cherries are hardy on a dry soil, but not fruitful; we have too many summer and fall varieties of apples; the tender kinds cannot be grown except by top-grafting. Reports were not reliable unless conditions were known.

Prof. Sommers gave a very interesting paper on scale insects, with life history and scientific description, and methods of destroying them. This brought out a discussion of the San Jose scale law. Prof. Summers had little confidence in fumigation certificates. The laws of other states had not been effective. Mr. Wilson would have a national law. Mr. Bomberger said emigrants take trees and plants with them without inspection, and the inspection cannot be enforced.

The report of the delegate to Minnesota, Mr. Secor, highly commended our seedling exhibit, also the Woman's Auxiliary; and he considered the discussions very profitable for the consideration of Iowa fruit growers.

Mr. Coleman, on "Experimental Horticulture." Definite plans should be made and carried to completion. Plant improvement opens a broad field for study and work; crossing fruits the principal line to be followed. He has succeeded in crossing on Wolf River with marked success. A better apple than either parent the result; has also crossed cherries, producing the best he has seen.

Fungous diseases were discussed by Prof. Craig, giving something of life history, methods of growth, etc. Advised the destruction of all imperfect fruits that develop spores. He considered the native plum one of the most important fruits of Iowa, and its greatest enemy the rot, a fungous disease, which could be controlled by spraying and gathering and destroying affected fruit, especially the dry plums that hang to the limbs in winter. Black knot also serious, should be carefully cut out while green, and wound painted with turpentine; for smaller fruits would depend on spraying with Bordeaux mixture. Apple and pear blight was bacteria and not fungus; it affects the sap of the trees and requires different treatment.

Mr. Burnap, delegate to South Dakota, reported: Southern varieties of fruits quite successful on the Missouri bottom lands. Flowing wells used for irrigation in some places. On the Vermilion were large plum orchards, ten to fifteen acres common; 1,000 bushels were marketed from a limited area—sold in covered bushel baskets.

Mr. Watrous reported as delegate from Illinois. Their lines of investigation ahead of Iowa: cultivation and spraying last year had resulted with good crops this year; failures attributed to neglect. The society condemned the sale of spurious jellies as fruit products. Their experiment stations were disseminating valuable information. Russian fruits of no commercial value in Illinois. The Wealthy apple was highly commended, and the outlook promising for other Minnesota seedlings. Russian cherries were useless for Illinois. Chestnuts successful in the southern part.

Mr. Irving, of Missouri, reported the Wealthy apple as one of the best and most profitable for northwest Missouri.

Mr. Wilson had tested the Wealthy for cold storage along with other varieties. The Wealthy proved much the better. Mr. Haviland has the product of forty acres of Wealthy in cold storage keeping perfectly.

Mr. Graham, on "Pears." Must have clay subsoil and depends upon spraying with Bordeaux mixture. Succeeds with Winter Nellis and Duchess d'Augouleme.

"Growing Peaches." N. K. Fluke. Seedlings stand better than others. Many in open ground were killed last winter; not so much hurt where standing in grass; covering the trees while standing is not practicable; covering with straw rots the buds; covering with dirt kills them; corn stalks or coarse light cover the best.

The Bailey peach was discussed; condemned by Mr. Wilson. Mr. Reeves had five trees of Bailey, all of different fruit. Mr. Van Houten said the Bailey was at home in Muscatine, and it was claimed to produce true to seed, consequently seedlings had been sold for the Bailey. It was a well known fact that the natural flora of Muscatine belonged further south, a peculiar condition of the soil and climate supposed to be made largely by the trend of the river and contour of the bluffs.

The society, by resolution, voted $250 to publish the fruit and climate maps of the state made by the secretary, Mr. Greene.

Mr. McGeehan and Mr. H. A. Terry were made honorary life members. The work of Mr. Terry was eulogized by Mr. Wilson. He said Mr. Terry would only introduce fruit of special value, and had shown at Philadelphia the best native plum, and had in his collection forty superior varieties not yet introduced.

The evening session was devoted to papers on birds, street trees, native trees, etc., without discussion. These papers considered the different varieties of native trees in regard to their adaptability to street and ornamental planting, and also their utility. The walnut and hard maple were highly spoken of.

All the officers of the society were re-elected.

Mr. Jackson, of Glenwood, set forth the cherry interests of Iowa; 16,000 cases were sold in Glenwood last year; the fruit is always in good demand; 75 cents per case gives a profit of 50 cents. Forty trees, eight years old, produced 2,000 quarts, and sold for $100. Advises European plan of planting on road sides; gravel loam the best soil; little pruning necessary. Would recommend Early Richmond, Montmorency, Morello and Wragg.

"Rocky Mountain Conifers," by M. J. Wragg. Blue spruce was given first place, and the value of other conifers discussed. Prof. Budd would use Iowa seeds of white pine in preference to those from other localities.

Reports from the trial stations gave statistical returns of the conditions of large and small fruits and plants. Mr. Patten's reports were specially

interesting, as he is known as a careful observer. He would discard all the Russian plums, as one native tree had borne more fruit than all the Russians in thirty years. Communia plum entirely worthless; not one bushel has been grown in an area covering sixty miles wide across Iowa. The Chinese sand pear hardy and valuable for crossing; also one Russian pear.

Strawberries were considered by Mr. Councilman. Spoke highly of Crescent, Warfield and Bederwood; home growers should plant only staminates.

Mr. Plummer gave a description of grapes best adapted to Iowa.

"Study of Insects in the Common Schools," by Prof. Summers, created a lively discussion. One of the points dwelt upon with force was that nature studies in the schools could not be successfully carried out with text books alone, and before these subjects are introduced the teachers should be fully prepared.

The subject of "School Gardens" was given by F. M. Powell, of Glenwood, in which he gave a glowing account of the beneficent results of this work in Germany, France and Austria, and regretted that we were behind in this line of education. The subject was presented in a forcible and pleasing manner and was well received.

MINNESOTA STATE BEE-KEEPERS' ASSOCIATION, ANNUAL MEETING, 1899.

DR. L. D. LEONARD, SEC'Y, MINNEAPOLIS.

Wednesday, Dec. 6th, 1899. Meeting called to order by Pres. J. P. West. After prayer by Rev. Mr. Mitchell, and music by the Misses Longfellow, a talk on pollination of flowers, by Prof. Conway MacMillan, Prof. of Botany of the State University, was given, before the combined associations of Horticulturists and Bee-Keepers.

The minutes of the last meeting were read and approved.

Report of executive committee was read and approved.

Special committee on Foul Brood Legislation reported no progress.

Mr. Grey, of St. Cloud, reported foul brood as dying out in his neighborhood. No other member present seems to have been much troubled with it.

The treasurer, Mr. L. E. Day, reported the bills of the year as amounting to $15.10; amount received for dues, $25.; amount on hand before the meeting, $73.30; balance now on hand, $83.20.

A letter from Mrs. Livingston, thanking the association for the interest taken in her blind condition and also for having elected her a life member of the association, was read by Pres. West. The president was requested by the association to respond to Mrs. Livingston in a fitting manner.

The Bee-Keepers having been invited with the Horticulturists to visit the Agricultural College, at St. Anthony Park, voted to accept the invitation, and accordingly adjourned to Thursday morning, Dec. 7th.

Thursday morning, Dec. 7th, 1899, meeting called to order by Pres. West, who made an address on the general subject of bee-keeping.

A paper by Mr. C. Thielmann, who was unwell and could not be present, was then read, on "How I Manage my Apiary."

Next was a song by Miss Ethel Acklin, of St. Paul. Next a talk on "How I Prepare and Winter Bees Out Doors," by C. G. Mattson, Lindstrom, Minn. He reported a crop of 2,500 lbs. of honey from thirty-nine colonies.

Next a piano solo by Mrs. Frank Hoffman, of St. Paul, which was heartily encored.

Next a paper by Hon. Eugene Secor, of Forest City, Iowa, was given, on the "Adulteration of Extracted Honey and How to Prevent It." In connection with this subject, Pres. West spoke on adulteration of honey in Minnesota. It was voted to send the following resolution to the senators and representatives of this state, at Washington:

Resolved, That we the members of the Minnesota State Bee-Keepers' Association, in convention assembled, at Minneapolis, December 7th, 1899, indorse and recommend the passage of the Brosius Bill, H. R. 12,190, by the congress of the United States, and earnestly ask the support of all members of congress and senators from Minnesota to its speedy enactment into law.

It also voted the following resolution:

Resolved, That we insist that the Dairy and Food Commissioners of the state of Minnesota make an honest effort to enforce the law against the adulteration of extracted honey in this state.

Messrs. Wm. Russell, H. C. Acklin and J. P. West were chosen a committee to present this resolution to the Dairy and Food Commission.

Next a talk by Dr. E. K. Jacques, of Crystal, on "My Method of Producing Comb Honey." Next a paper by Mrs. H. G. Acklin, of St. Paul, "My Method of Raising Queens."

Next was a recitation by Miss Ethel Acklin, of St. Paul.

The question having arisen as to whether this association should join the United States Bee-Keepers' Association, it was laid on the table for one year, the members to be notified of such vote to be taken in the printed programs for that meeting.

Thursday afternoon. First a paper was given by Mrs. F. C. Miller, of St. Paul, "That Wonderful Insect, the Bee."

Next a paper by Mrs. Flitner, of St. Paul, "The Bee, or not the Bee, That is the Question."

Next the election of officers, which resulted in the following gentlemen being elected for the next year:

President, J. P. West, Hastings; Vice-presidents, Gideon H. Pond, W. H. Putnam, Hudson, Wis.; Frank Moeser, Minneapolis; Secretary, L. D. Leonard, Minneapolis; Treasurer, L. E. Day, Clinton Falls; Executive committee, H. G. Acklin, St. Paul, chairman, Wm. Russell, Minnehaha Park, Herbert Van Vleit, Farmington.

It was voted to buy a box to keep the records in.

Voted to send a vote of thanks to the Metropolitan Music Co. for the use of the piano.

Voted to send a vote of thanks to the county commissioners and park board for the use of their rooms for the meetings.

Song by Ethel Acklin, of St. Paul.

Adjourned.

SOUTH DAKOTA STATE HORTICULTURAL SOCIETY, ANNUAL MEETING, 1900.

C. E. OLDER, DELEGATE, LUVERNE.

The meeting of the South Dakota Horticultural Society, called to meet at Parker, Jan. 16, 17 and 18, convened at 10 o'clock a. m., and immediately proceeded to business. The president, Mr. H. C. Warner, of Forestburg, not being present on account of sickness in his family, Mr. C. W. Gurney, of Yankton, vice president, took charge of the meeting, Prof. N. E. Hansen, of Brookings, being secretary.

The first business of the meeting was by a unanimous vote of the society to come into the Minnesota society as an auxiliary society, without losing their own identity as an organization, under Art. III. of the Minnesota society's constitution.

The attendance was fair, and a good deal of enthusiasm prevailed, being far better than for the past several years.

Mr. Gurney read his paper on "Propagation and Management of Small Fruits." To prevent thawing and freezing in winter was the leading thought presented. The papers, "Small Fruits in Clay County," by Rev. E. H. Cowles, of Vermillion, "Commercial Strawberry Culture," by E. L. Collar, of Vermillion, and "Small Fruits for Profit," by D. M. Dickinson, of Richmond, were read and discussed, when the dinner hour arrived.

At two o'clock the members came to order and Mr. Lathrop, of Iowa City, and Mr. C. E. Older, the delegate from the Minnesota state society, were made honorary members.

"Propagation and Culture of Forest Trees," was the subject of a paper by Mr. Geo. H. Whiting, of Yankton. He advocates clean cultivation, and giving the trees the same chance to grow that you would corn or potatoes. In the discussion that followed it was clearly demonstrated that without good cultivation raising trees was impossible.

A Norby, of Madison, gave a talk on "Evergreens for Ornament and Windbreak," red cedar from the north being especially emphasized. Ponderosa pine, jack pine, Black Hills spruce and white spruce were strongly recommended. The Colorado blue spruce, from seed grown in Colorado, was hardier than that purchased of Mr. Douglas—this had been his experience. Prof. Hansen stated that in Germany the blue spruce is grafted on the Norway spruce. The discussion emphasized the fact that red cedar from the south was not desirable for Dakota. Jack pine are easy to transplant without shade and a desirable evergreen; far better than the Scotch pine. Prof. Hansen stated that Scotch pine seed are gathered largely in southern France from low, scrubby trees, as they are easier to gather from. Mr. Lathrop said Scotch pine in his city were dying out after they became large trees. Mr. Cowles lost a few small ones, but his large ones are all right. Several gentlemen favored the Austrian pine rather than the Scotch pine.

The subject of apples root-killing and blighting was brought up. Prof. Hansen advocates Siberian crab roots for budding stock, giving a whole Siberian root. They are free from blight, bear earlier, dwarf the tree to about two-thirds of the size of the apple tree but do not affect the apple in size.

Mr. Whiting thinks that at Yankton the Duchess is far hardier than the Wealthy. Mr. Norby said the Wealthy with him was hardier than the

Duchess. Mr. Gurney recommends deep planting, quoting an orchard at Wakefield, Neb., of one hundred Duchess, set thirty inches deep, being the finest orchard he knew of.

Mr. Cowles thought they had taken surface roots, and it was those that made the trees so good.

Mr. A. W. Applebee, of Parker, objected to deep setting in their Dakota soil, the top soil having all the moisture,

Wednesday morning. The president called the meeting to order at 9:30 with a statement that Mr. Cowles would read the papers of the absent members.

Mr. C. W. Gurney, acting president, then read the president's report, which was accepted and adopted. Prof. Hansen then read the report of the secretary. He dealt largely on root-killing of apple trees at the experiment station, and he gave an interesting report of his labors at the station. He condemned the use of foreign stocks for plums. Plums grafted on sand-cherry are doing well, some of them blossoming at one year old and making a growth of about two-thirds the size of the others.

In the discussion which ensued several new plums were mentioned, native plums alone being regarded as successful, and on their own roots if possible, although it did not seem to make much difference with some varieties. In this connection Mr. A. Norby read his paper on "Culture and Propagation of Plums." Hogs in the plum orchard was advised only in the form of young pigs, but a good healthy growth was desired to make large fruit as well as a good healthy tree.

Mr. L. R. Alderman, of Hurley, who is the active man of the Alderman fruit farm, where there is 110 acres in apples, thins his crop at about the time they are two-thirds grown and finds market for them at that time, making his crop larger and better by so doing.

The president asked the Minnesota delegate what lesson he learned from the last winter. Mr. Older stated that he found that some covering for the ground was essential, as where his grounds were bare the trees root-killed, and where he had some protection his trees came through all right. He sows buckwheat at the last cultivation, about Aug. 1, and thinks it successful.

Mr. Alderman cultivates his orchard with disk harrow in spring, then drags with a common harrow, towards fall cutting the weeds high with a mower, leaving the weeds and stubble to catch the snow and for winter protection.

The papers on "House Plants," by J. K. Jenson, and "The Russian Wild Olive as a Hedge Plant," by T. L. Mc Crea, of Tyndall, were read. Mr. Whiting recommends the wild olive very strongly, as it is a good drouth resister, grows as fast as the box elders, and no stock can go through it, and is perfectly hardy. Prof. Hansen explained the wild olive as it grows in Russia and other cold countries and considers it one of the best trees we have for windbreaks.

"Ornamental Hedges," by Mr. C. W. Gurney. Buckthorn and red cedar were considered good, but Russian mulberry was not favored outside of the Missouri valley. Russian pea is very hardy and well adapted to hedges in cold and dry countries.

The Russian artemisia will make a hedge in one summer. It grows very quickly to about four feet high, when the blossom must be cut off, or the plant will ripen and winter-kill. It is very highly recommended by Mr.

H. W. Hinds as a protection or shade plant for small evergreens. When trimmed it makes a very handsome hedge.

The secretary's and treasurer's reports were accepted as read, and adopted.

Wednesday afternoon opened with a paper by B. F. Hines, of Beresford, on "Lawn Making," flowering shrubs being the leading subject developed.

"The Farmer's Garden and Orchard," by W. B. White, of Olivet. Quite a discussion came up on grapes, Mr. Lathrop thinking a garden without grapes not to be thought of. Mr. Norby thought Madison too far north to grow grapes satisfactorily. This was cut short to hear a paper by John Grant, of Wessington, on "Springs in Garden and Orchard." Several other papers on the same subject were read, when "Irrigation on Farm Lands," by S. A. Cochrane, state engineer of irrigation, of Brookings, was explained in an able manner by him.

"Farm Gardening on the Prairie," by J. H. Berry, of Armour, and others. "Melon Culture" was treated by C. E. Fitch, of Alwilda.

Thursday morning. Some papers were passed over to be published, and the fruit list was taken up and revised by districts, the state being divided into eleven districts.

The place of holding the next annual meeting was named as Sioux Falls. The election of officers resulted in Mr. H. C. Warner, of Forestburg, president; L. R. Alderman, Hurley, vice president; Geo. H. Whiting, of Yankton, treasurer; Rev. E. D. Cowles, Vermillion, librarian; Prof. N. E. Hansen, Brookings, secretary.

A vice president for each fruit district was appointed.

A paper on "Commercial Orcharding in Turner County," by L. R. Alderman and "Fruit Culture in Southwestern Minnesota," by your delegate, closed the proceedings.

After adjournment your representative in company with Prof. Cochrane, conductor of the State Farmers' Institute, and Mr. Himes, of Centerville, visited the large apple orchard of Mrs. L. A. Alderman, near Hurley. This is an orchard of one hundred and ten acres of apples set out twelve years ago and is doing nicely. Her son, Mr. L. R. Alderman, conducts the business. He is a very competent and pleasant young man, who is making his mark as a fruit producer in the northwest. There is a block each of Duchess and Patten's Greening, with a large field of Wealthy, that are especially fine and healthy. He tried some of the tender varieties, but as with others they are a failure. Here it is exemplified on a large scale that hardy apple trees grown in northern nurseries are doing well, while others are a failure.

Mr. Alderman sorts his apples closely, and all those not up to grade go into a mill, and the cellar, forty feet long, full of barrels of pure cider vinegar, explains what he does with them.

His strawberry field of four acres surrounded with ditches, and with water pipes laid from an elevated tank, holding about one hundred fifty barrels, is very fine.

Mr. Alderman has, like most others, tried varieties not suited to his locality, and although he raised last year over twelve bushels of Snow apples, they are not a success by any means.

MEADOW VALE HORTICULTURAL SOCIETY, ANNUAL REPORT, 1899.

A. W. KEAYS, SECRETARY, ELK RIVER.

Our annual meeting was held on Nov. 11, 1899. Officers elected: President, Chas. A. Hill; vice-president, E. G. Bailey; secretary, A. W. Keays; treasurer, Albert Hill; executive board, Florence R. Hill, Minnie Heath, A. C. Bailey. A. W. Keays was appointed delegate to attend the state annual meeting to be held Dec. 5 to 8. A resolution was passed that this society take advantage of the offer of the state society in regard to the horticultural report and join the state society in a body.

Some valuable lessons are to be learned from our experimental stock. Some of the apples that have been sold as hardy have been killed to the ground. Many of the newer apples stood the winter well and appear to be promising for this section. The most damage from the past winter's freeze was in root-killing where common seedlings were used for stock or in budded trees. Sub-soiling the land and deep setting of trees has been most successful with us.

We have a seedling blackberry that is far ahead of anything we have on trial; it is a very strong grower and an immense bearer of very large, juicy fruit. A large number of new apple trees were added to our stock last spring and several miscellaneous trees and evergreens, among which is a new wild peach, just discovered in the mountains of California. I think this will be a valuable stock for grafting, being very hardy. It was sent to us by V. O. Bailey. He also sent us Picea breweriana, or weeping spruce, one of the rarest conifers in existence in this country, and only to be found in two or three places.

Strawberries were a fine crop the past season, seventy bushels being picked on our old trial bed and a small new bed.

Hibernal trees, set two years, were in fruit; also several varieties of plums. Nearly all varieties of apples and plums were in bloom, but the fruit mostly dropped off the last of June. Nearly all trees have made a fine growth except those injured the past winter.

Grapes have a very heavy crop of very fine fruit. We had peach trees that stood the past winter without any protection and were not injured.

MULCHING.—That mulching does not retard blossoming has been again demonstrated by Prof. Craig, of Canada, who mulched apples, cherries, plums, gooseberries, currants and strawberries about March 15, when the ground was deeply frozen and covered with about a foot of snow. The mulch did not retard the leafing and blossoming except in the case of strawberries, where, of course, the tops were entirely covered. This agrees with the experience of the best fruit growers in the United States.

STORING CELERY.—I dig a trench eighteen inches wide, twelve feet long and four inches deeper than the height of the celery to be placed in it. Before killing frosts come I take up the celery, place it in the trench in upright position and close together. I cover with two boards 1x12 in. x 16 ft., until heavy frost and snow set in, then cover with a thick layer of stable manure. Other covering might answer.—James Marshall, Iowa.

SOUTHERN MINNESOTA HORTICULTURAL SOCIETY, ANNUAL REPORT, 1899.

C. PARKHILL, SECRETARY, CHATFIELD.

The counties of Freeborn, Mower and Fillmore comprise the territory of this society.

Last spring much damage to fruit was feared, as the result of the extreme cold weather of the past winter, but as the season advanced it was seen that the hardy varieties had not suffered to the extent that had been anticipated. On the whole, the late test winter has been a blessing to prospective fruit growers in this territory.

In the orchard, the Wealthy has wintered almost as well as the Duchess, and some of the newer seedlings, such as the Patten and the Peerless, have shown a remarkable vitality.

As a rule, small fruit wintered in good shape, where well protected, and gave good returns, but the apple crop was almost a failure.

Our society proposes to help find the "coming apple," and to that end has been distributing one year seedling apple trees to all members who wish to experiment on this line. The seedlings are supplied at a nominal price by the Wedge Nursery Company.

That $1,000 premium hangs a little high, but is so tempting that many of our members are planning to raise an apple tree on which they can climb high enough to reach the prize.

As a result of the work of our society, an interest in horticulture is slowly but steadily growing among the farming community; on the other hand, of the many business men who became members in 1898, only a small percentage renewed.

Our annual meeting will be held at Albert Lea in February, and there is a good prospect of the largest and best meeting in the history of our society.

PROGRAM OF THE SOUTHERN MINNESOTA HORTICULTURAL SOCIETY, 1900.

Following is the program of the Seventh Annual Meeting of the Southern Minnesota Horticultural Society, to be held in Skinner Mercantile Co. Hall, at Albert Lea, Minn., February 14 and 15, 1900:

OPENING SESSION, WEDNESDAY, 10 A. M.

Good and Bad Results of the Past Winter.—Two minutes talk—All.
Award of Premiums on Essays.
Trees and Shrubs for the Farmer's Front Yard.—J. Marshall, Washington.
A Good Way to Raise Good Plums.—O. W. Moore, Spring Valley.
The Place for and Treatment of the Orchard.—C. Morgan, Forestville.

WEDNESDAY AFTERNOON SESSION, 1:30.

President's Address.—President J. C. Hawkins, Austin.
What is the Matter with My Orchard?—W. F. Kearns, Austin.
How to Raise 4,000 Quarts of Strawberries per Acre—H. C. Ellergodt, Lanesboro.
Protection Against Root Killing.—Clarence Wedge, Albert Lea.
Some Enemies in Fruit Raising and How to Fight Them.—Prof. S. B. Green, State University.

WEDNESDAY EVENING SESSION.

Program for this session will include reading of first and second prize essays, and will be arranged by the ladies of Albert Lea.

Programs will be distributed at commencement of session.

THURSDAY MORNING SESSION, 9:30.

Report of committee on fruit. Report of committee on seedlings.—Two minute papers.
Take Time to Notice the Beautiful in Nature.—Miss L. Freeman, Austin.
Horticultural Adversity of Last Winter.—J. C. Hawkins, Austin.
Secretary and Treasurer's Report.
Election of Officers.

THURSDAY AFTERNOON SESSION, 1:30.

Which Varieties Have Stood the Past Winter the Best?—J. S. Harris, La Crescent.
A Good Way to Keep Apples in a Common Cellar.—Geo. Andrus, Chatfield.
Good Varieties of Small Fruit for the Farmer.—E. F. Peck, Austin.
Horticultural Education in our Common Schools.—J. Freeman, Austin.

PREMIUMS FOR ESSAYS.

Premiums are offered as follows for essays by our young people in Minnesota and two northern tiers of counties in Iowa. Any girl or boy under eighteen years of age in said territory can compete. Essays not to exceed 200 words each, and to be in the hands of Clarence Wedge, Albert Lea, on or before February 12. Competition limited to one topic.

TOPIC 1.—Where and Why I would Plant Evergreens.
First premium, $5.00; Second, $3.00; Third, $2.00; payable in nursery stock.
TOPIC 2.—Raising Small Fruit for the Home.
Premiums same as above.

Secretary's Corner.

PREMIUMS ON HORTICULTURE AT THE NEXT STATE FAIR.—This premium list is now under consideration, and suggestions in regard thereto will be gladly received. They may be addressed to this office or to Mr. J. M. Underwood, Lake City—*at once* to be in season.

CLARENCE WEDGE AGAIN AN EDITOR.—We note that Mr. Wedge is to take charge of the "Orchard and Garden" department of "The Farmer," the one of the three Minnesota agricultural papers which is published in St. Paul. He is cut out for this kind of work, and his assistance will be of material value to the journal and its readers.

ANNUAL MEETING, SOUTHERN MINNESOTA HORTICULTURAL SOCIETY.—The date for the regular meeting of this vigorous off-shoot of the state society is fixed for February 14 and 15, and the place of gathering is to be Albert Lea. The program is at hand and will be found elsewhere in this number. It contains as an interesting innovation offers of premiums of $5.00, $3.00 and $2.00, in nursery stock, for essays on "Why and Where I would Plant Evergreens," and the same premiums on "Raising Small Fruits for the Home." The prize essays will probably be published in the Horticulturist. Can *you* not attend this meeting?

ANNUAL MEETING, WISCONSIN STATE HORTICULTURAL SOCIETY.—The program for this annual gathering is received. The session convenes at Madison February 6, 7 and 8, on the same week when all other Wis. state societies hold their sessions in the same town. It should be a lively week. The program touches horticulture at most points and presages an interesting occasion. We note the names of a number of Minnesotans thereon, viz.: Hon. S. M.

Owen, Martin Penning, O. M. Lord and Frank Yahnke. The last named is the regularly appointed delegate from the Minnesota society and will give us a report of the meeting.

Wednesday morning is to be occupied with a memorial service for the four well known horticulturists who have died in the past year: J. C. Plumb, F. W. Loudon, M. A. Thayer and P. M. Gideon.

LIST OF THOSE SENDING NEW MEMBERS IN JANUARY:—

John Zeller, New Ulm, 1.
A. K. Bush, Farmers' Institute, 27.
Geo. R. Widger, Chatfield, 1.
Paul Burtzlaff, Stillwater, 1.
J. S. Harris, La Crescent, 1.
Wm. Sandrock, Money Creek, 1.
N. J. Trenham, Alexandria, 1.
C. E. Older, Luverne, 1.
J. S. Parks, Pleasant Mounds, 1.
A. H. Pickle, Sleepy Eye, 3.

A DIRECTORY OF MINNESOTA NURSERYMEN.—A full directory of all who are engaged in the nursery business in the state would be a great convenience in connection with the work of this society, and might well be published annually. The secretary has undertaken to get up such a directory and needs the co-operation of all the nurserymen of the state to do so completely. All Minnesota nurserymen who see this are requested to send in as soon as possible the names and addresses of all whom they know are engaged in this business in the state. Do not delay doing this because of a personal acquaintance with the writer, for you can in all probability send in some names with which he is not familiar, and the list should be made a very complete one. The secretary has in mind another step that might be taken in connection with this list should the responses prove to be full enough. Please do not postpone sending this information.

ANNUAL MEETING, MINNESOTA AGRICULTURAL SOCIETY.—Secretary Randall, of the above society, has again given us an interesting and helpful program, and judging by the attendance those interested in the subjects considered appreciated it. Horticulture was represented by Mr. O. M. Lord, who presented the subject of "Plums for Minnesota." His paper was listened to with marked interest, and many questions followed it. This was not an horticultural audience, but the interest taken in this topic by the general public was very apparent.

The session was in every respect a harmonious one and resulted in the re-election of all the retiring officers except in the case of the second vice-president, Mr. Geo. H. Partridge, who declined a nomination and suggested as his successor Mr. Thos. H. Shevlin, who was unanimously elected. In each case the election was unanimous. The society is to be congratulated on the happy conditions prevailing in its counsels.

Officers, 1900.—John Cooper, President, St. Cloud; Chester R. Smith, 1st Vice-President, St. Paul; Thos. H. Shevlin, 2nd Vice-President, Minneapolis; E. W. Randall, Secretary, Hamline; F. J. Wilcox, Treasurer, Northfield.

Board of Directors—C. N. Cosgrove, Le Sueur; J. M. Underwood, Lake City; W. M. Liggett, St. Anthony Park; J. H. Letson, Alexandria; N. S. Gordon, Crookston; J. C. Curryer, Mankato.

ECHOES FROM FARMERS' INSTITUTE.—"The people of this county are very enthusiastic over the possibilities of growing trees and fruits as they better understand their value and good methods of planting, handling, cultivation, etc.

"We held an evergreen planting session from the platform the first day of the institute—uniting forces and experience to prove the value of the Scotch

pine, red cedar, etc., to all farmers in these western prairies, when grown under shelter of the golden willow or other hardy trees.

"The afternoon of the second day 'Our Farmers' Fruit and Vegetable Garden' was presented and well received. We make no mistake in advising *all* to endorse this 'one acre garden.' With evergreens and a belt of timber on these prairies, 'making forest conditions' under which no failures in growing fruits are reported when the trees and plants, etc., have good care."

Madison, Minn., Jan. 18, 1900.

"The Morton meeting was a tame affair compared with the session held at Madison, although the meeting here was 50% better than one held in 1898. The people listened with much interest to our talks on the value of evergreens on the farm and how to grow them. Many questions were asked and answered. an evidence of the general interest in the subject.

"In teaching the 'Gospel of Fruit Growing,' I always begin with the statement or text that all orchards and fruit gardens *must* be enclosed with a protection of evergreens and other trees *on all the prairie section* of our state if the planter expects to grow fruits. Establish about the farm buildings and orchard *forest conditions*, and the problem of successful fruit growing and gardening is solved to the man who is willing to plant and give his plantings intelligent care.

"We presented the subject of 'Fruits for the Farm' in the afternoon of the second day of our institute, recommending the planting of everything in the garden in long rows the entire length of the garden, so that cultivation can be done with horse and corn tools. All appeared to be very much interested in the improved native plum, as many questions were asked about methods of growing that fruit.

"To get the plum started we are urging their value as a practical shelter belt about the farm yards and buildings where people have been discouraged planting the evergreen. Under protection of the plum trees evergreens can be successfully grown in this part of Minnesota, regardless of past failures, if the Scotch pine and red cedar is planted.

"Mr. T. B. Terry, of Ohio, gave a short, interesting and very practical talk on his method of growing and using the strawberry. Many people who succeed in growing fruits do not know how to use them to the best advantage. The farmer's family deserves the best product of the farm. Strawberries should be used by the *peck* or *bushel* on every farm in Minnesota instead of by the quart.

"F. M. Greely gave the experience of a South Dakota farmer with raspberries. When they were planted in long rows, with plenty of room between rows to cultivate and mulch, the results were most satisfactory even in that section, where fruit growing is regarded a failure. The family was supplied in abundance at a minimum cost of laber, with some to turn off for the neighbors.

"Mrs. Laws, in her talk on foods, which was valuable and most practical, calls special attention to the value of fruits, the apple in particular as being strictly medicinal as well as a much needful food and luxury for the entire family during the winter; also to the fact that home grown fruits are much better and cheaper than patent medicines and will save many visits from the family physician and consequent expensive doctor's bills.

"A word to the wise is sufficient. Plant a generous and well assorted fruit and vegetable garden next spring, ordering *at once* from some reliable grower a good supply of trees, plants and seeds." A. K. BUSH.

Morton, Jan. 19, 1900.

LUTHER BURBANK, SANTA ROSA, CAL.

(See opposite page.)

THE MINNESOTA HORTICULTURIST.

VOL. 28. MARCH, 1900. No. 3.

LUTHER BURBANK AND HIS HORTICULTURAL CREATIONS.

PROF. S. B. GREEN, ST. ANTHONY PARK.

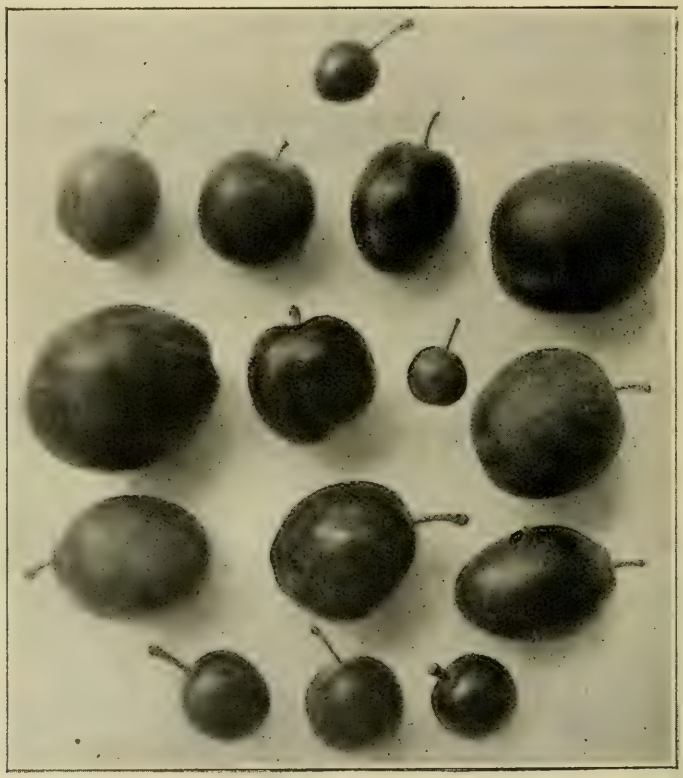
Every farmer and gardener, and almost every person in Minnesota, knows of the Burbank potato, which has so long been a standard market sort here, but comparatively few know of its origin or that the producer of it has continued, since giving us that, to bless mankind by developing many other desirable plant products. The Burbank potato was originated by

Luther Burbank's Home, Santa Rosa, California.

Luther Burbank in 1873, while living in Massachusetts, which is his native state. It was grown from a seed ball of the Early Rose, that was very likely crossed with the Davis seedling, which grew in the same field. The seed was sown in the open ground and produced potatoes of full size the first year. He sold his stock of this to J. J. H. Gregory, and with the money thus obtained he moved to California, where the climatic conditions are better adapted than those of Massachusetts to the development of new vari-

eties of plants. For a number of years he successfully carried on a large nursery business, until he was in a position to devote all his time to his very interesting work of originating new varieties of plants.

Personally Mr. Burbank is somewhat under size and of a quiet, gentlemanly appearance. He is highly esteemed by his neighbors as a man of good sound judgment. His home is in a little vine-clad white house, just a few blocks away from the center of the town of Santa Rosa, California.



Stoneless Plums. At the top the small Stoneless French Damson—the parent of all the others. Much reduced.

His experiment grounds were formerly located here, but owing to the soil being rather heavy and not especially adapted to his work he has moved his main experiment grounds to Sebastapol, five miles distant, where the land is rather sandy, but he still lives at Santa Rosa. He has, however, several smaller experiment farms. It was the great pleasure of the writer to spend parts of three days last summer with the subject of this sketch.

Mr. Burbank's catalogue of 1893 he entitled, "New Creations in Fruits and Flowers," and it attracted much attention in this country and in Europe. Among the interesting novelties which he has sent out may be mentioned Sweet Baton, Burbank, Satsuma, Gold, and a dozen or more other very desirable plums, which are proving hardy and productive in many sections;

new and greatly improved varieties of quinces, walnuts, chestnuts, gladioli, callas, clematis, nicotianas, lilies, roses, blackberries, raspberries and many other plants. One of Mr. Burbank's latest and most valuable productions is an apricot-plum hybrid, which is a large smooth-skin, free-stone fruit of excellent quality.

By crossing the small stoneless Damson plum with the French prune he has produced a large number of stoneless plums of good size and quality. In a few cases some of these varieties have remnants of stone left on one side of the seed, that were perhaps as big and thick as the finger nail of my little finger. The seed, however, was generally well developed, although in a few cases this, too, had become nearly or quite obliterated, and one seedless and stoneless variety is extremely early. Some of these plums are of large size, and it would seem that they must be the precursors of marketable pitless plums.

Common Field Daisy. Showing five large blooms of the improved form, 5½ inches in diameter, and of graceful forms; and below the common field daily without improvement.

He has one plum tree which he said produced pistillate flowers only, and these have no petals. Another plum tree has flowers that never open, yet it fruits abundantly, the flowers, unquestionably, being self-fertilizing in the bud. In peaches he has got some of his best results by crossing the Alexander and Wager peach with the white nectarine. He has crossed the peach and almond.

He has been paying considerable attention lately to the improvement of the common field daisy, or whiteweed of the eastern states (Chrysanthemum lecanthemum), and has obtained flowers five and one-half inches in diameter and of most graceful forms, thus making it an interesting and

ornamental garden flower. He is putting considerable time on the improvement of the calla and aims to get a yellow calla of the same form as our common white calla lily. Two years ago he sent out a calla having the lasting fragrance of violets and lilies.

The results from crossing the cultivated raspberry and the Lawton blackberry have been some plants which produce fruit that pulls off the receptacle like the raspberry and others that produce fruit which sticks to the receptacle as in the blackberry.

In referring to the effect of stocks on the quality of fruit he said that the Burbank plum when ripened on Prunus simoni seemed to have the best quality.

Bud Variations in our common Calla Lily.

Formerly Mr. Burbank made many hand crosses in order to get variations, but by continuing this work over a long series of years he finds that most of the stock growing on his place is so mixed and so inclined to vary that he gains very little by hand crossing, and he uses straight seedlings of his crossed plants, from which he generally gets the best results after the second and third generations from the cross. As his newer and best seedlings are all the result of careful hand crossings, he is now inclined to depend largely upon the work of insects and the variations resulting from former combinations.

In discussing the improvement of the buffaloberry and other wild plants, he said that in his experience the most important thing had been to find plants that would vary, and that any plant that varied greatly from the original type, even though it might be a change to the worse, might produce seedlings that would vary widely from the type and be the basis of future improvement.

He makes a special point of top-working all his seedling tree fruits and does not consider them fairly tested until they have been thus tried. Some

do better and some worse grafted than when on their own roots. Nearly all plums improve in all respects by grafting and generally improve with age for several years, even on their own roots. He showed us a number of plum trees that had two or three hundred different seedlings grafted on them and one apple tree that he said was grafted with 526 different seedlings.

The experiment grounds at Sebastapol are laid out in a very neat and systematic way. He uses no irrigation, as the rainfall in this part of California is plentiful and well distributed through the growing season.

Partial View of Burbank's Experiment Grounds, Sebastopol, California.

In his first catalogue Mr. Burbank uses the following words: "There is no possible room for doubt that every form of plant life existing on the earth is now being, and has always been, modified more or less by its surroundings, and often rapidly and permanently changed, never to return to the same form. When man takes advantage of these facts and changes all the conditions, giving abundance of room for expansion and growth, extra cultivation and superabundance of the various chemical agents in the most assimilable form, with abundance of light and heat, great changes sooner or later occur, according to the susceptibility of the subject; and when added to all these combined governing forces we employ the other patent forces of combination and the selection of best combinations, the power to improve our useful and ornamental plants is limitless."

"Tomatoes may be grown from seed pollenated by potato pollen only; pure wheat from rye pollenations, and vice versa. Pure raspberries, blackberries and dewberries from apple, rose, quince or mountain ash pollenations.

"There is no barrier to obtaining fruits of any size, form or flavor desired, and none to producing plants of any form, color or fragrance; all that is needed is a knowledge to guide our efforts in the right direction, undeviating patience and cultivated eyes to detect variations of value."

Mr. Burbank refers to his productions in the plant world as "New Creations," which they are. He has created some plants which, were they found wild, would be termed new species; perhaps new genera. He has opened the eyes of every intelligent horticulturist and botanist to possibili-

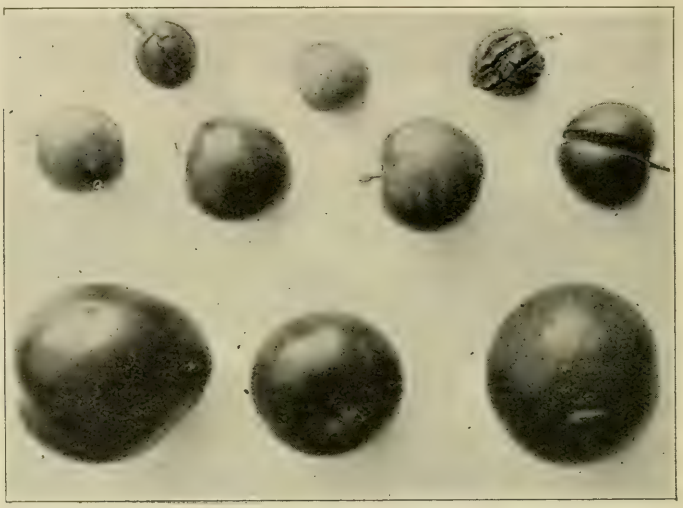


Photo of plums grown from the same lot of seed showing great difference in size and appearance.

ties hardly dreamed of before he presented his interesting work. Such a man is entitled to great respect from his fellow men, and I should like to see a good and substantial monument erected to him in the nation's capital, for his "Creations" are a blessing to all mankind.

SOME THINGS LEARNED IN FORTY YEARS' EXPERIENCE AS AN ORCHARDIST IN WISCONSIN.

A. G. TUTTLE, BARABOO, WIS.

That the extreme and long continued cold of some of our winters and the excessive heat of the summer sun, with a dry atmosphere, are the main causes of injury.

That the best grounds for orchard planting are the elevated, well drained clay lands.

That we should plant nothing less hardy than the Duchess of Oldenburg.

That trees should be trained with bodies from four to six feet according as their manner of growth is upright or spreading.

That the bodies of the trees should be protected from the summer sun.

That the orchard should be cultivated in some hoed crop; neither merchantable fruit nor healthy trees can be grown with trees only in the sod.

That it is necessary to wage continued war against insect enemies, and that they are more destructive in sodded than in cultivated ground.

Vice-Presidents' Reports, 1899.

VICE-PRESIDENT'S REPORT, FIRST CONGRESSIONAL DISTRICT.

F. W. KIMBALL, AUSTIN.

In reporting on the fruit prospects for another season, as well as the results of the past, I am under a disadvantage, having been out of the district much of the time during the season, and having had little opportunity to enquire or examine. The winter of 1898-9 was not altogether without good; it tended to weed out many varieties of apple, and plums as well, in many places individual trees that we thought hardy; and, probably, it has taught all some lessons worth remembering.

So far as I have observed the crop of small fruit in this district was rather small. The strawberries were very good where the vines were not killed, but the red and black raspberries were most all injured, so the crop, as a rule, was light. The Loudon, however, showed scarcely any injury and fruited well, and any one desiring to raise raspberries can hardly afford to be without it. As a rule, I think the Columbian did well and is going to prove a valuable berry, especially for canning. Gooseberries and currants did well. Apples were a light crop, as a rule, though many individual trees and even orchards did fairly well. Plums, as a rule, were light, and in many places badly affected by the gouger as well as by the scab.

The season has been quite favorable, and with a favorable winter I think that the prospect for fruit another year is favorable.

Blight prevailed in many localities, and good air drainage did not in all cases, at least, prove a panacea. And here let me say, if any member has trouble with the blight and has growing in his orchards blighting kinds, such as the Transcendent, Yellow Transparent, etc., cut them out root and branch, as he would small pox from among his household.

VICE-PRESIDENT'S REPORT, SECOND CONG. DIST.

S. D. RICHARDSON WINNEBAGO, CITY.

The year 1899 was what we call an off year for fruit. The year previous apples, plums and cherries bore heavily, as a general rule, and where they did so, did not bear much this year, with very few exceptions; while trees that did not bear last year bore a fair crop this year but not heavily.

The heavy rains in the spring seemed to hinder pollenization. The winter was hard on some varieties, like the Malinda, Haas, Utter, etc., while our standard varieties recommended by our society were not injured. The Wealthy stood the winter apparently just as well as the Duchess, and is the apple that is planted in larger quantities than any other variety in our

part of the state, but the most of the growers are too busy to prune, and have been since the trees were planted, and the trees have short bodies and low tops.

The cherry stood the winter as well as the apple and blossomed freely but failed to set much fruit. I have noticed that a heavy rain immediately after they blossomed seemed to hinder fruitfulness.

Some varieties of plums seemed to blossom and set fruit freely, but owing to the heavy rains, or for some other reason, but a small proportion came to perfection.

Strawberries were a fair crop on dry land; on low land the water killed the plants. Tile that had been large enough to carry off the water in previous years failed this year. There was too much water. If there could be some variety of strawberry found that was two weeks later than our common variety and an abundant bearer, it would be a godsend to growers of that fruit in this part of the state.

Currants were a fair crop. Gooseberries were light.

Blackberries are grown by but very few persons in this part of the state. Mr. Mills, of Garden City, raised a good crop this year. Of course, he covers his bushes in the fall, as also his Gregg raspberries.

The black raspberries were a fair crop; the red a failure, with most growers.

Grapes root-killed in some places very badly and failed to ripen up properly in the fall, even where the roots did not seem to be injured.

Some of the new seedlings of the Duchess seem to be as hardy as their parent and better keepers and of better quality for eating purposes.

There is not any doubt but that some of the newer varieties of apples will keep in a common cellar all winter, and when they get disseminated and get to bearing I do not know any reason why the farmer in our part of the state cannot have plenty of apples in his cellar all winter.

FRUIT LIST FOR SECOND CONGRESSIONAL DISTRICT.

APPLES.

For general planting: Wealthy, Duchess, Hibernal, Charlamoff, Longfield, Patten's Greening, Tetofsky, Malinda.

For trial: Okabena, Peerless, Hotchkiss, Anisim, Yellow Sweet, Kaump, Gilbert.

CRABS AND HYBRIDS.

For general planting: Virginia, Martha, Whitney, Minnesota, Sweet Russell, Gideon's No. 6; Briar Sweet.

For trial: Lyman's Prolific, Faribault, Crampton No. 3.

PLUMS.

For general cultivation: De Soto, Forest Garden, Weaver, Cheney, Wolf, Rollingstone, Wyant, Hawkeye.

For trial: Stoddard, Surprise, Mankato, Aitkin, Ward.

GRAPES.

Concord, Delaware, Moore's Early, Worden, Agawam, Brighton, Janesville.

RASPBERRIES.

Red varieties: Turner, Cuthbert, Loudon.

Black and purple: Ohio, Palmer, Nemaha, Gregg, Older, Kansas, Souhegan, Schaffer, Columbian.

BLACKBERRIES.

Ancient Briton, Snyder, Badger.

CURRANTS.

Long Bunch Holland, Stewart, North Star, Victoria, White Grape.

GOOSEBERRIES.

For general planting: Houghton, Downing.
For trial: Red Jacket, Triumph, Pearl, Columbus.

STRAWBERRIES.

Pistillate: Crescent, Warfield.
Staminate: Bederwood, Lovett, Splendid.
Valuable for trial of the native fruits: Dwarf Juneberry, Sand Cherry, Buffalo Berry.

VICE-PRESIDENT'S REPORT, THIRD CONG. DIST.

MRS. A. A. KENNEDY, HUTCHINSON.

We had a good crop of fruit of all kinds this year, the best we have had for some time. Strawberries were fine. Red raspberries on my ground were the best they have been for years. Black caps came on in good shape, but after a few pickings they commenced to dry up; they were where we could not turn the water on to them.

Currants bore heavily. The North Star were small.

Plums were a good crop. I had several kinds all set at the same time, but the Cheney bore the heaviest. I picked a milk pail two-thirds full off from each tree, the fruit large and perfect, while the De Soto and Forest Garden bore a few and of inferior quality. They have been set three years.

For strawberries, the Crescent and Bederwood have done the best for me. Of red raspberries, the Loudon has given the best satisfaction, although the Turner has always done well, and I found ready sale for them. The Miller is nearly as large as the Marlboro. I do not see so very much difference in the fruit; it throws up more sprouts.

Three years ago we set out several kinds of apple trees, among them were the Wealthy (that bore seven apples last year), Okabena, Patten's Greening (one of these bore last year, four apples, two large ones and two middling sized. The tree was about as large as my thumb and perhaps three feet tall). Two of the Peerless bore this year; one had four apples, and the other two; they were set out as much as six or seven years ago, but have been transplanted twice since. They were set first. One Sweet Russet crab and one Tonka crab both bore this year. The Wealthy blighted some last year.

VICE-PRESIDENT'S REPORT, FIFTH CONG. DIST.

JOHN H. STEVENS, MINNEAPOLIS.

The past year has been fairly productive in fruit such as is commonly grown in this section. Small fruits were abundant in this county, but owing to competition from the south the production did not receive fair prices, especially for strawberries and raspberries. Apples were not as abundant as they were last season. The Duchess and Wealthy are still favorites, though other varieties reached maturity.

The wholesale dealers in fruit in this city informed me that Minneapolis is one of the best markets in the northwest for the sale of fruit. I cannot but help to repeat what I have said in past years, that we, especially of Hennepin county, owe much to the good work of Prof. S. B. Green, in teaching us all about fruit growing. No one doubts for a moment that in the near future we shall throughout the state excel in this important industry of apple growing, and what a debt of gratitude future generations will owe this society.

VICE-PRESIDENT'S REPORT, SIXTH CONG. DIST.

MRS. JENNIE STAGER, SAUK RAPIDS.

All through this part of the country, strawberries fruited exceedingly well. Where the worms had not passed through last year, small fruit such as raspberries, currants and gooseberries also fruited well, but on our place, and on all other places where the worms had put in their work the year before, there was hardly half a crop. Hundreds of apple, plum and cherry trees died outright, also thousands of oak and other deciduous trees, through the ravages of the worms.

Grapes fruited heavily, but with the exception of the earliest varieties none ripened thoroughly. We had a cool, wet fall, which accounted for it.

Fifteen years ago, currants, a few crab apple trees and wild plum trees, could be found here and there around the country. Now almost every family has different varieties of fruit planted on their home lots, and fruit culture is extending all through this part of the country, mainly through the work and literature of the State Horticultural Society. At our St. Cloud state fair quite a good showing of different kinds of fruit was exhibited.

We have had such exceptionally fine weather this October and November that the fruit, elm and willow trees have commenced budding out, and we are feeling anxious about our trees going through the winter under the circumstances. However, we will live in hopes.

VICE-PRESIDENT'S REPORT, SEVENTH CONG. DIST.

D. T. WHEATON, MORRIS.

In making a report of horticulture in the Seventh Congressional District, if it should correspond to the size of the district, it should be lengthy; but if it is according to horticulture itself or to the interest taken in it, it should be very short. This district consists chiefly of the strip of prairie extending from the north line of the state south along the western border of the state for some two hundred miles, that part of the state acknowledged to be the most difficult in which to raise fruits or to make trees grow. But comparatively little fruit is grown and most of that probably costs more than the same could be purchased for in the markets. I think more is paid for nursery stock each year than the value of all fruits grown, and the amount of nursery stock growing today is but little if any more than it was ten years ago.

This view of the condition of horticulture in the district may seem to be pessimistic, yet I think has been the condition of horticulture in all parts of the northwest in its early days.

Most people like fruit, and it does not require a very good man to sell nursery stock, but it does require more than an ordinary man to take care of it and make it grow. Although some of the stock sold is not hardy or not suitable or fails to receive good care, yet some succeeds to grow with good care and favorable conditions or with neglect, and shows to the faithless that fruits can be raised on the prairies of western Minnesota.

Although the number of orchards and fruit gardens make but a poor showing, yet the amount of fruit grown is not so very small after all. Every now and then is found a garden where more fruit is raised than is needed for home use. During the past year fruits of all kinds have done fairly well.

The severe cold of last winter and the lack of snow made it a trying one for fruits; yet when properly cared for they generally came out in good condition and fruited full.

Of most small fruits that make a good crop, strawberries and raspberries were as good as could be wished for; gooseberries were a full crop, but currants were nearly a failure.

Blackberries are an uncertain crop and do not seem to do well, and there were few berries on them this year.

The apple crop was fair. Cultivated plum trees—especially the late varieties—were generally loaded with fruit, while most of the wild plums were nearly a failure.

There has been more blight on the apple trees than usual, which may be owing to the severe winter weakening the vitality of the trees. With good hardy stock and good care, I do not think there is any reason for discouragement.

At the present time the ground is full of moisture and in good condition for wintering.

Nearly all small fruits and most of the apples in the fruit list grow and do well in western Minnesota, and I know of no good reason why plenty of apples and plums and small fruits should not be raised, and I think the time is not far distant when they will be.

FRUIT LIST SEVENTH CONG. DISTRICT.

Strawberries: Capt. Jack, Bederwood, Parker Earle, are among the best.
Raspberries: The Turner does the best.
Gooseberries: Houghton.
Currants: Red Dutch and White Grape.
Hybrids and Crabs: Whitney No. 20, Tonka, Early Strawberry, Power's Red, Virginia, Martha and others.
Apple: Duchess, Hibernal, Patten's Greening, Wealthy, and Longfield.
Plum: Forest Garden, Weaver and others doing well .
Grapes: Concord, Janesville, Worden and Delaware.

In putting fruit in cold storage, insist upon having the temperature lowered gradually. Managers of large cold storage houses are studying this question carefully and are becoming informed upon the matter. They first submit the fruits of all kinds to a temperature of, say 50 degrees, to begin with; then gradually remove it to other compartments, until they get it to the compartment and temperature best suited to the particular kind of fruit.

WOMEN'S AUXILIARY DURING 1900.

MRS. ANNA B. UNDERWOOD, SEC'Y, LAKE CITY.

Woman's interest in all things pertaining to out-door life seems to be increasing. We hear of Town Improvement Clubs, Village Improvement Clubs, and, strange as it may seem, Country Improvement Clubs. The women in rural districts are beginning to realize that with the expenditure of a little effort on their part much may be accomplished in the way of beautifying their surroundings.

Many inquiries were received last spring from different parts of the state, asking for advice as to the best method of forming a club. Several wanted to know how to go to work to get rid of weeds. All the letters were answered. In view of the fact that there may be many more inquiries during the winter and spring of 1900, the Auxiliary has decided to get up a simple form of constitution and by-laws, and also a program for Arbor Day observances; these to be printed in pamphlet form for free distribution.

The Women's Auxiliary was represented at the Federation of Women's Clubs, by Mrs. Jennie L. Stager.

The Women's Auxiliary was represented at the Federation Headquarters by a committee consisting of Miss Lucia Danforth, of Carlton College, Northfield; Miss Emma V. White, president of the Women's Auxiliary, and Mrs. Anna B. Underwood, secretary of the Women's Auxiliary. Through this committee many of the circular letters printed last spring were distributed.

Interest in nature study seems to be increasing greatly. The city and town schools already have incorporated it to a greater or less degree in their work, and the rural schools should take steps to arrange themselves in line with the movement.

At the annual meeting of the Women's Auxiliary, held Dec. 7, 1899, it was decided to continue to urge the women to organize Country Improvement Clubs, and to suggest, as a form to mould public opinion to, the improvement of the school grounds in rural districts, and the introduction of nature study into the schools.

At this meeting, the members considered the suggestion, made in the report of the executive committee, that the Women's Auxiliary have charge of one session of the Horticultural Society meeting. The courtesy of the executive committee was fully appreciated, and the members decided to avail themselves of the opportunity offered to present a program embodying the objects of the Auxiliary.

The President: I would like to ask if it would not be well to have a committee of the women appointed to wait upon the governor and ask him if he will not give out his Arbor Day proclamation a little earlier than usual and lay a little more stress upon those points we have brought out. Coming from the chief magistrate of the state and published by all the papers throughout the state, it would be of great importance. I think he would be glad to do it.

Mr. Wedge: I think it is the duty of the society to interest themselves in this movement. I confess I have been more backward than any one else. If we are to grow we must enlist the services of the

women. This is a branch of horticulture that peculiarly attracts their attention, and they ought to stand not only equal in numbers with us, but equal in participation. I desire to see the society take hold of this matter and do all in its power to make a specialty of this work in our future meetings.

Miss White: I hope the other members of the society feel as Mr. Wedge does. We have inaugurated the work in a very quiet way and on a small scale as yet. We would be glad if the wives of all the members would be interested in this work, and as their presence here is somewhat uncertain we do not know how to reach them except through their husbands. We wish every husband here would interest his wife in becoming a member of the Women's Auxiliary. It is not like running a club by ourselves, we are simply trying to do a little good in the state through this organization. Our constitution provides that any member of the State Horticultural Society may become a member of the Auxiliary upon application, and any one who is not a member can become such upon payment of a fee of twenty-five cents.

Mr. Underwood: I feel very much interested in this work as calculated to benefit our state society, particularly so because of my attention having been called to the direct work that has been done by the Women's Clubs in supporting the Agricultural Society the past summer. It was a new movement inaugurated at the last fair. It seemed to me if we could have their help at our annual fair it would be a great thing for us, and we brought it about, as you are aware, and the interest and enthusiasm that was awakened by and through the Women's Clubs was perfectly marvellous. When you can find a large class of women that will meet in a building on a race track where horses are beating a record, drawing premiums amounting to five thousand dollars a day, together with a great many counter attractions, then you will know as I know of the enthusiasm that was displayed and the work that was accomplished by the women at the state fair. We ought to encourage their work in this society all we can. They ought to have a large audience room; this room will not begin to hold them all. They ought to have a large, well ventilated room in which to hold their meetings. At the same time we are holding our meetings, they can hold their meetings, and then at some time they can hold a joint meeting with us. I hope we may have a great big boom through the efforts of the Women's Auxiliary.

Apples wrapped in paper keep better than when stored in any other way.

THREE NOTED HORTICULTURISTS, GIDEON, PLUMB AND LOUDON.

A MEMORIAL ADDRESS.

A. J. PHILIPS, WEST SALEM, WIS.

I feel on this occasion like thanking Mr. Latham and those who helped him prepare this program for honoring me by affording an opportunity to say something regarding Mr. Gideon, a man whom I always esteemed and respected for the work he did for horticulture in the cold north. I have felt since coming into this room that it would have been better had I listened to and put in practice the advice of my wife on many previous occasions. When noticing my name on a program she would say, "Now prepare something; write it out; and then you can read what will be a credit to yourself and a credit to the subject you are to talk about." But I confess I am here totally dependent as to what I shall say and as to thoughts that shall come to me and inspirations I shall receive and have received from the surroundings of this room and the memories of the acquaintance with, and the life work of, the men of whom for a few moments I am to speak.

I have been asked by Mr. Latham to say something on this occasion in regard to two of our Wisconsin pioneers who have been called from their labors during the past year, who were as much like Mr. Gideon in their work and aims as two men could be, Mr. F. W. Loudon, of Janesville, and Mr. J. C. Plumb, of Milton. Their work has been along different lines, but it has all tended to the same end, something that would be of value to horticulture in the northwest.

I was quite well acquainted with Mr. Gideon as well as with the other men I have mentioned. It was my privilege, and I esteemed it an honor, when you held your meetings on the old grounds out here in the country, before Prof. Porter selected the beautiful new site you now occupy, to conduct Mr. Gideon before the society after a somewhat lengthy absence. There had been some misunderstanding between Mr. Gideon and the members of the society, and Mr. Gideon, like Mr. Plumb and Mr. Loudon, who were men noted for being true to their convictions, was true to his convictions, and perhaps for some reason Mr. Gideon had not been as cordial to the members of the society as they desired him to be. However, he was true to his convictions. He thought he was right, and the people at that time knew comparatively little of the great work he was doing on those grounds as they do now. But they were anxious to have him there at the meeting and expressed a desire to take Mr. Gideon into fellowship with the society. Accordingly a committee was appointed to go out and confer with him in regard to the matter. He had brought his wife with him, and the committee went out to see him, and when they had reached a conclusion Mr. Peffer and myself were sent out to bring them in. As we were from Wisconsin it was thought right and proper that we should escort the old people into the meeting. Mr. Peffer asked me to introduce them. I am always glad if I can say or do anything that will help any one. So we went out to the other room, and when ready we went in, and Mr. and Mrs. Gideon followed. I do not now remember what I said, but I know I introduced him and his wife to the audience, with a few kind and as well chosen words as I could command. There was a recess of fifteen minutes given which was spent in

shaking hands with the old people. I shall never forget that occasion while I attend meetings in Minnesota or anywhere else.

Last year at your meeting he came in at yonder door, he was noticed by the audience as he walked up that aisle and took his seat close up here. The president, Mr. Underwood, gave an intermission of ten minutes and asked the members to rise and shake hands with Mr. Gideon. Now when that audience shook hands with him they acted as though they appreciated his work, they then felt he was entitled to honor, and they felt honored by his presence.

Perhaps no one was more impressed with Mr. Gideon's presence at your last fair than I was. I went and sat down beside him, and I think I spent an hour with him at two sittings. He had before told me time and time again that while the fairs permitted horse racing and gambling he would not exhibit. I said to him, "You have considerable fruit here, Mr. Gideon." "Yes, I know," he replied, "but I am not showing for a premium. I want to show the people that peaches can be raised in Minnesota, and I have some new seedlings here that some of you have never seen. The people of Minnesota have been so good to me, and perhaps I have said things I should not have said; no doubt I have. I am not showing these apples for a premium. I have been in straightened circumstances, I have been burned out and have lived alone out there, yet not only the people of Minnesota, but of other states have said good things about me and made me some donations which I appreciate. You said good things about me at Omaha, and I have come to make this show because I appreciate what has been thought and said of me." I then noticed that a tear was trickling down from each eye over his wrinkled cheeks. I do not know whether he had a presentiment that that would be the last meeting he would ever attend in Minnesota. I saw he was failing, but I little thought he would leave us so soon, or, as he insisted, I would have gone home with him to see his seedlings which he loved so much. He believed he had spirit communications and he believed he was directed in his work by a higher power than the words of the Minnesota Horticultural Society or any one in the flesh.

There is one incident that I often think of which happened at one time while I was visiting him. It was my first visit to his place and in going along the walk there was a toad sitting right beside the path. "Now," said he, "step around on this side so we do not disturb that toad. That fellow," he said, "stays here all the time; he is the best friend I have, for he catches many injurious insects, and he works for nothing—I do not have to pay him a cent." It struck me then that only a kind hearted man would step out of his way to give a toad a chance. That little incident convinced me that Mr. Gideon was a kind hearted man; and his gifts of flowers that day to the school children ratified my opinion of him.

I will say nothing of the Wealthy apple; that has been spoken of here before. I made a specialty of showing northern seedlings at Omaha. Professor Taylor was asked three years ago at the Wisconsin meeting what the value was of all the seedlings grown in the north, to which he replied they were not worth fifteen cents. When I thought of how men like Mr. Gideon and others had been spending the best part of their lives in propagating seedlings I felt as though the judgment of Mr. Taylor was very harsh. He tried to modify his statement by saying that the men who originated the seedlings had never made fifteen cents. Perhaps that was true. I never

realized what Peter M. Gideon had done for the northwest as forcibly as I did at the Omaha Exposition. I took the finest plate of Wealthy apples from my place, and I found a dozen more plates there from Wisconsin. We had the best plates in front, and we labeled them, "The Wealthy apple, a Minnesota seedling originated by Peter M. Gideon." There were nine states that exhibited the Wealthy. A Montana man said to me, "We do not have to propagate seedlings, we take the original varieties." I looked his exhibit over, and out of fourteen plates he had twelve plates of northern seedlings. When I looked over the various exhibits, notably those of California and Oregon, I could not help but feel that Peter M. Gideon had done a valuable work for horticulture. We have a fine show of Wealthy apples here on the table, and if we could have some plates of the beautiful Loudon raspberry, and the Jessie strawberry, the Windsor and Plumb Cider apples and other evidences of the work done by Mr. Loudon and Mr. Plumb it would make an impressive picture.

I was arranging for a paper from Mr. Plumb for our winter meeting. He was past seventy, and he said to me, "I have been thinking for years of writing something of Wisconsin seedlings that should be preserved, and I feel now that if I ever do it I must do it this winter." With the weight of three score years and ten on his shoulders he was still delivering milk to seventy customers. He came to the meeting, but had had no time to write a paper, so he made a lot of notes and read them there. I asked him for those notes, but he said he must carry them home and revise them. He never lived to do it. I obtained the notes and his paper from his family and fixed them up the best I could and then returned the paper to them.

In regard to Mr. Loudon. I was intimately acquainted with him. He was just as sincere and anxious to promote his chosen work as were Mr. Gideon and Mr. Plumb. I was at his place a few weeks before his death. He had a new seedling cherry, and he told me I must come down and get some scions and let the people have the benefit of it. He was an unselfish man and lived largely for others. He had a brother who was writing a book on forestry in England, but his health was so poor that he took his wife with him wherever he went for fear he might be taken sick while alone. He was so anxious to finish his book, that while he was working on the last chapter he dropped dead. F. W. Loudon was the same in his work; he possessed the same enthusiasm and perseverance.

I often visited him and told him what was being done in horticulture. He said he preferred hearing of it instead of reading, as he went from home but little.

There is much more that I could say of these three useful men, but I have occupied more than my allotted time, but being from another state I have taken a little more liberty.

In conclusion I want to say this: In Massachusetts where the Baldwin apple originated there was erected a monument to the man who originated it, and on top of that monument is a Baldwin apple, and I hope to live to see the day when Minnesota (and our Wisconsin people ought to help your people) will have a monument erected to the memory of Peter M. Gideon over on your university grounds, where the citizens and especially the young men of your state can see it, and in the cemetery where Mr. Gideon is buried, and I would propose to put on top of that monument a Wealthy apple that will perpetuate the memory of Peter M. Gideon—which will also be perpetuated by the growing and bearing Wealthy trees in the north as long as time lasts.

JOBBERS IN TREES.

E. H. S. DARTT, OWATONNA.

I very frequently receive letters inquiring as to the responsibility and methods of certain Minnesota nurserymen or jobbers in trees. Since the recent disasters to trees south of us, there is greater demand for genuine Minnesota grown trees. The tree jobber has appeared. He has located at a good shipping point, planted a few trees, established an office and packing grounds, with tree cellars and sheds, gets out an elaborate catalogue and in a few weeks the great "Columbian Nursery Company" gets a puff in the papers as a new business enterprise and goes sailing on. Its boss says to his many agents "Go ye out into this cold world and sell genuine Minnesota grown trees. All want the best, as indicated by the price charged, so I have placed prices well up in the catalogue. Be liberal. Frequently donate 50 cents or $1.00 in the shape of a 2 cent grapevine. It pays to please customers. Sell the Dewey, McKinley and Bryan at $1.50 per tree. If your customer is English add Queen Victoria. If he is Dutch or Irish put in Gen. Kruger instead and sell the four trees for even $5.00. I have paid $1,000 each for these choice varieties and have very few left, but sell all you can!"

I am glad to say that some of the jobbers are planting young stock extensively and will soon become respectable nurserymen, if such a thing is possible after having learned so many tricks of the trade. As a matter of information I suggest that our State Horticultural Society publish a Nurseryman's Directory, giving in tabulated form, name, location, age and approximate amount of stock growing, number of agents employed and amount of sales.

Under existing circumstances allow me to give a little gratuitous advice to the poor man—the rich are abundantly able to take care of themselves, and if they get swindled they can stand it. But to the poor man I would say: Buy nursery stock only from reliable nurserymen of your own state. Do not be deluded by the song of the agent. If he has any high priced, new thing leave it for your rich neighbor and buy sparingly of well tried, common things, which, as a rule, are of more real value than boomed sorts. Fay's Prolific currant had a great run, but I understand that a man in Wisconsin dug out acres of them because they were of less value than the more common kinds. If you would get value received buy good common stock and give it good common care.

Owatonna, Minn., Feb. 15, 1900.

(Country papers please copy.)

ANNUAL MEETING, 1899, SOUTHERN MINNESOTA HORTICULTURAL SOCIETY.

R. PARKHILL, RETIRING SECRETARY.

The seventh annual meeting of this society was held at Skinner Hall, Albert Lea, Feb. 14 and 15. The attendance was good, considering that the district court was in session, and that the meeting had been postponed about a month, but faithful work had been done by Clarence Wedge and some of the Albert Lea ladies, and so on the whole the meeting was a success. The hall was brightened by a liberal display of plants and flowers, furnished by Mr. Clausen, proprietor of the Albert Lea greenhouses.

Our honorary life member, J. S. Harris, was prevented from being present, but sent a valuable paper. Ditus Day, Farmington, and J. H. Upton, Cresco, Ia., were cordially welcomed as honorary members for 1900.

Freeborn county made a good display of fifty plates of apples, of which the Wedge Nursery furnished thirty-eight. Ditus Day showed two plates of his long keeping seedling apple, one being of the crop of 1898. President Hawkins had a very fine display of ten varieties of plums.

While there was no lack of interest at the first session, yet there seemed to be an increasing interest as the meeting progressed.

The report of the fruit committee showed a general failure of the apple crop in this territory, a plum crop slightly below the average, and where winter protection was given an average crop of small fruit. The committee on seedlings reported several promising new seedling apples, some of which were long keepers.

The apple was prominent on the program and in the discussions, but a fair share of the time was given to the plum, small fruit, evergreens, and ornamental shrubs.

Rev. R. C. Mosher, of Albert Lea, gave an address on "Gladiolus Culture." He advocated a more general culture of this magnificent flower, which showed every color and blending of shades, and which was as easily cared for as a potato crop. He considered that these three things were necessary to success in raising the gladiolus: a deep rich soil, deep planting and abundance of moisture.

No change was made in the fruit list. A committee appointed by President Hawkins submitted a list of apples, crabs and plums, giving percentage of each, for guidance of Minnesota farmers in setting out small orchards. The list which was adopted and recommended by this society is as follows:

APPLES.

Wealthy, 20 per cent; Patten, 10 per cent; Longfield, 10 per cent; Hibernal, 6 per cent; Repka Malenka, 5 per cent; Duchess, 6 per cent; Tetofsky, 4 per cent.

CRABS AND HYBRIDS.

Martha, 6 per cent; Sweet Russett, 4 per cent; Minnesota, 4 per cent; E. Strawberry, 2 per cent; Whitney, 4 per cent.

PLUMS.

De Soto, 7 per cent; Stoddard 5 per cent; Wyant, 4 per cent; Aitkin, 2 per cent; Miner. 2 per cent.

An interesting and instructive program prepared by the ladies of Albert Lea was given at the Wednesday evening session. Mrs. C. E. Brainerd. Albert Lea, presided. A paper by Mrs. Ober, Albert Lea, on "Woman's Work in the Improvement League," showed the importance of the work done by the Woman's Federation of Clubs, and advocated the organization of local Improvement Leagues in every city and village. A paper on "Needed Reforms in Villages and Cities," by Miss Southgate, Albert Lea College, pointed out needed reforms in sanitary laws and a more rigid enforcement of existing laws. All taking part in the discussions favored the suggestions presented in these papers. The first prize essay on "Why and Where I Would Plant Evergreens," was read at this session. Several

vocal solos by Mrs. Voles and Mrs. Fuller, respectively, were enjoyed by the audience.

At the closing session a motion prevailed in favor of a three days' meeting at next annual meeting.

Officers elected: President, J. C. Hawkins, Austin; vice presidents, O. L. Gregg, Jonathan Freeman and O. W. Moore; secretary and treasurer, Mrs. C. E. Brainerd, Albert Lea.

There is good prospect of an increase in membership, and the outlook is hopeful for the work of our society in 1900. Our next annual meeting will be held at Austin.

WISCONSIN HORTICULTURE.

S. M. OWEN, MINNEAPOLIS.

I had the pleasure of meeting with the Wisconsin State Horticultural Society during its late annual convention at Madison. It was more than pleasurable, it was profitable to meet the leading horticulturists of that state, for it is equivalent to meeting some of the best fruit growers in the Union. Other duties made it impossible to devote as much time as was desired to this meeting, but enough was given to it to show that the members of the society are able, earnest and enthusiastic fruit growers; and that the cause will grow and flourish in their state is inevitable under such leadership.

The evening of the first day was devoted to forestry, under the auspices of the State Forestry Association, and it was largely upon invitation for the purpose of addressing that society that I was present. The subject of forestry is evidently beginning to attract something like the attention its importance demands in Wisconsin, as was evidenced by the attendance and discussions on the evening named. It is cheering to old workers in the cause to realize that forestry is beginning to attract more attention everywhere, and among classes that have been accustomed to ignore it.

Minnesota was represented in person at the meeting by Mr. Frank Yahnke, who read a paper on vegetable growing for market, and was a frequent and able contributor to discussions of various subjects. Mr. O. M. Lord, Minnesota City, furnished a paper on improvement of the native plum, and Mr. Penning, of Sleepy Eye, wrote about the Surprise plum and its origin. It is needless to say that Minnesota did not suffer through its representatives.

Among the well known Wisconsin horticulturists it was a treat to see and hear were: F. C. Edwards, L. G. Kellogg, A. L. Hatch, M. S. Kellogg, Prof. E. S. Goff, President Franklin Johnson, Secretary A. J. Philips and others. Wednesday evening was devoted to an exercise in memory of the lamented eminent fruit promoters and originators, J. C. Plumb, F. W. Loudon, M. A. Thayer, and Peter M. Gideon. Following was the program of the evening: Prayer; music; short addresses by Prof. E. S. Goff, G. J. Kellogg, President Whitford, Frank Yahnke, B. S. Hoxie, S. M. Owen, and A. J. Philips; close by prayer and doxology.

In justice to Mr. Yahnke it should be said that his contribution to this memorial service was particularly appropriate and touching. His allusions to Mr. Plumb, with whom he was intimately acquainted, were tender and pathetic. It was an unconscious tribute to the eulogist as it was an eloquent one to the eulogized.

The forenoon of the following day was devoted to routine business, the election of officers, etc., and the afternoon to discussions pertaining to revision of fruit list, reports from committees and from visiting delegates from adjoining states. The meeting closed in the evening with papers, recitations, music, etc., by the students of the School of Agriculture, which is ample assurance that the occasion was enjoyable in all respects.

FURTHER TRIBUTE TO PETER M. GIDEON.

A. W. SIAS, HARBOR VIEW, FLORIDA.

Dear Fellow Members: On receiving the Jan. 19th number of the Minnesota Horticulturist, I read the sad news of the death of Peter M. Gideon, and about a dozen tributes to his sacred memory, that do him honor—without the least show of adulation. Should have been glad to have been in "on the ground floor" and to have heard those kind, heart-felt words spoken, and to have added my opinion of this great worker in not only the cause of horticulture, but also in the great cause of temperance and right living. Good men claim that it is never too late to speak a good word for Abraham Lincoln, and let us all claim the same for Peter M. Gideon.

Fourteen years ago today I was acting president of your society, and I knew that I must do something liberal and great or misrepresent good Mr. Harris (whom I was acting for). So to use about the language of one of our young members, I proceeded to "water the stock" of the honorary life membership list by the nomination of Peter M. Gideon, Norman J. Coleman, R. L. Cottrell and F. K.Phoenix. One-half of this list have already passed over the mystic river. One has been honored with a seat in a president's cabinet, perhaps the first horticulturist to ever get there. Phoenix is the same good old temperance, high grade worker that he always was. It pays to be liberal. Our annual paying list of membership keeps pace with the honorary list.

The Wealthy is a grand success over a wider range of country than any new fruit of my knowledge. After leaving Minnesota in 1890, I stopped three years in Colorado and found the Wealthy among the foremost in that state. "Ten states had the Wealthy on exhibition at the Omaha Fair," says Bro. Philips.

The Minnesota State Horticultural Society is non-partisan and non-sectarian—still I have no doubt that the Methodist wing of the society will look back to the day that we met Peter M. Gideon half way with open arms and fully restored him to the highest rank in our society, as a sort of compromise with spiritualism—"a love feast" that augured no good. Be this as it may, when I grasped that warm hand, that had scattered seeds to bless mankind so freely, now cold in death, and that of Dr. Porter, who led him to us, the man who left such strong evidence of his architectural skill—and bump of location for an agricultural school half way between the two cities—truly he has been wonderfully successful in erecting unto himself a proud monument—could such a man have been mistaken in the attempt to help restore the old soldier to his former rank? He, too, has gone to his reward. I am unable to communicate with his spirit, but have no fears as to its safety and happiness. Our records show that the gigantic form of Geo. P. Peffer was "resurrected" to act with our committee in the restoration to his rank of our brother Gideon. Mr. Peffer's tabernacle was laid aside some time since, but we do not believe that his high position among

the saints was lowered one iota by his help in the "peace conference" with Peter M. Gideon. Then that grand old member who honestly thought it "out of order" for a member to touch so heavy and lengthy on religious matters, plant breeding, horse racing, etc., was the second man I noted on the stand to grasp the kind hand of the noted Wealthy-producer—and to say, "I am happy to see you back in the society." Mr. Gideon answered as he warmly pressed his hand, "I am glad to get back." His daughter, Mrs. Webster, paid him a high tribute when she said, "he lived close to nature." I do like to see children honor their parents.

Prof. S. B. Green, in summing up his able scientific sketch of Peter M. Gideon, says, "We have cause to feel proud that he was a son of Minnesota." I agree with my friend Ex-Prest. Underwood, that nothing in the shape of a monument would please him like a living one. "In what gardens of delight rest thy weary feet tonight?"

Who knows more of the life and good works of Peter M. Gideon than John H. Stevens, from Maine, the founder of the seedling commission, the man who helped to name Minneapolis. If he says Peter M. Gideon was a public benefactor, "so say we all."

John S. Harris, who continued to hunt for an honest winter seedling apple for years after the two other members of his commission had passed away, and their obituaries recorded, says: "He will be remembered and honored by future generations." Wyman Elliot says: "No man in the state can show a better record." With A. J. Philips, I can say "I feel that no words than I can command can fully express my admiration for him and the great work he has accomplished." Like J. T. Grimes, "I know him well," personally, "by his fruits." And with S. M. Owen, I say, "well done good and faithful servant." We read with great interest the eloquent words of W. W. Pendergast and can say with him "his noble work will live after him." Mr. O. F. Brand, who knew Mr. Gideon well, says, "His mind was set on producing something good and valuable for humanity and he accomplished it." "So say we all." Speaking of monuments, I hope each member's plan will be speedily and faithfully carried out; as for myself I propose to go below the frost line and plant the eucalyptus gigantea to the memory of Peter M. Gideon.

Harbor View, Fla., Jan. 19, 1900.

EXPERIMENT GROUNDS AT LAKE MINNETONKA IN 1899.

ROLLA STUBBS, BEDERWOOD.

The season of 1899 was not favorable for a very large crop of apples. The long cold winter of 1898-99 did some damage to some young trees, five to eight years old, no more, however, than killing back the last year's growth on some varieties. The Wealthy seemed to be affected as much as any, except in some localities; the Peerless were nearly entirely killed. Our old trees, twenty-five years old, failed to bear more than one-fourth of a crop of fruit last year, those bearing mostly being Wealthy, Duchess, Patten's Greening, Peter; crabs, Whitney and Virginia. My seedling trees bore about half a crop, having borne annually for twenty years four to ten bushels a year each. Apple tree planting has taken a boom through this locality in the last three or four years and a number of promising young orchards are just coming into bearing.

The small fruit industry, the year of 1899, has increased one-third over previous years, the Minnetonka Fruit Growers' Association having sold $18,500 worth of small fruit for season of 1899, mostly raspberries of the Marlboro variety, and strawberries. We think the increase of small fruits here the coming year will be fifty acres, in an area of three miles square. While the Marlboro is the leading variety, we have many black varieties, Gregg and Nemaha principally. They did well. The Loudon is being extensively planted. The Miller is doing well here. All varieties did well here that were covered. I have the following varieties on my grounds: Marlboro, Loudon, Miller, Turner, Nemaha and Gregg, Shaffer's Colossal, Golden Queen. All these varieties went into the winter looking healthier than I ever saw them before.

Strawberries bore a heavy crop here, all beds doing well. The leading varieties raised here are Bederwood, Crescent and Lovett. I have on trial Warfield, Glen Mary, Haverland and Parker Earle. Plums were a light crop owing to heavy rains and chilly weather in the spring while in bloom, causing the blossoms to drop. My seedling variety, the Eureka, had one-fourth crop. I have the De Soto, Hawkeye, Rockford and Cheney. The De Soto was affected some with black rust on the trees. The curculio were quite bad. I have Early Richmond, English Morello and Wragg cherries. The Early Richmond are doing the best with me, standing the winter better.

STORY OF A MINNESOTA GARDEN.

PROF. THOS. SHAW, SCHOOL OF AGRICULTURE, ST. ANTHONY PARK.

The writer came to Minnesota in the autumn of 1893, and located in St. Anthony Park. At the rear of the dwelling is a small piece of level ground, which was covered with a thin sod of grass. Permission was obtained from the owner to dig up the ground, with a view to turning it into a garden. It was therefore dug the same autumn. The digging revealed the fact that it was "made" land; that is to say, that the undersoil was sand and gravel that had been removed from the cellar, and that the top soil was black loam, brought in from abroad. Over much of the surface the top soil was only half a spade in depth, and the undersoil at that season was so hard that the spade would not penetrate it. The next summer, 1894, was unprecedentedly dry, and yet the amount of produce obtained from it was a surprise to the writer. This is was that prompted the idea to ascertain how much garden produce could be obtained from this little piece of ground in a normal season; hence, an accurate account of everything that was grown upon it was kept during the years 1895, 1896, 1897 and 1898, except what was considered not strictly first-class, and was, therefore, thrown away amid the superabundance that was produced.

The following is a record of the produce grown during the summers mentioned above:

In 1895:	
Radishes, plants	3,227
Onions, from sets, plants	289
Lettuce, plants	539
Onions from seed, while thinning, plants	718
Onions from seed, harvested, plants	1,419
Lettuce, plants	585
Summer savory, plants	210
Sage, plants	77
Parsley, plants	90
Peppergrass, plants	56
Corn used green, ears	191
Cabbages, heads	65
Cauliflower, heads	16

Parsnips, plants	24
Beets, while yet growing, plants	111
Carrots, while yet growing, plants	62
Sage, plants	153
Summer savory, plants	79
Cress or peppergrass, plants	214
Chicory, plants	103
Spinach, plants	124
Brussels sprouts, plants	24
Corn for table use, ears	246
Peas, shelled, quarts	26
Potatoes, quarts	18
Beans in the pod, quarts	22
Cabbages, heads	12
Cauliflower, heads	14
Tomatoes, fruit	1,200
Cucumbers, fruit	446
Pumpkins, fruit	25
Citrons, fruit	20
Winter radishes, bu.	½
Winter turnips, bu.	½
Beets, bushels	6
Carrots, bushels	12
In 1896:	
Radishes, plants	5,577
Lettuce, plants	231
Onions from sets, plants	1,394
Onions when thinning, plants	1,810
Vegetable oyster, plants	150
Peppergrass, plants	200
Spinach, plants	128
Summer savory, plants	27
Sage, plants	100
Beets, while yet growing, plants	95
Carrots, while yet growing, plants	10
Corn, ears	130
Peas, shelled, quarts	25½
Potatoes, quarts	12
Beans in the pod, quarts	2
Beans, shelled, quarts	2
Cucumbers, fruit	151
Tomatoes, fruit	553
Pumpkins, fruit	11
Citrons, fruit	16
Squashes, fruit	20
Cauliflower, heads	9
Cabbages, heads	100
Fall turnips, bushel	½
Beets, bushels	2
Carrots, bushels	3
Onions, bushels	4¾
In 1897:	
Onions, while yet green, plants	854
Onions, matured, quarts	52
Radishes, plants	2,126
Spinach, plants	882
Potatoes, quarts	74
Cucumbers, fruit	565
Tomatoes, before harvesting, fruit	60
Tomatoes, harvested, pecks	3
Vegetable oyster, pecks	4
Fall turnips, pecks	6
Pumpkins, fruit	25
Citrons, fruit	15
Squashes, fruit	5
Beans in the pod, quarts	4
Beans ripe and shelled, quarts	3
Beets used while yet growing, plants	78
Beets, harvested, pecks	4
Carrots used while yet growing, plants	102
Carrots, harvested, pecks	6
Peas in the pod, quarts	61
In 1898:	
Radishes, plants	2,755
Onions while green (early), plants	1,692
Onions while green (late), plants	450
Onions, for pickling, plants	282
Onions, harvested, quarts	88
Onions, harvested, small sets, quarts	5
Spinach, plants	753
Lettuce, plants	157
Peppergrass, plants	292
English thyme, plants	108
Summer savory, plants	60
Rosemary, plants	160
Parsley, plants	160
Vegetable oyster, plants	122
Tomatoes, fruit	312
Cucumbers, fruit	262
Squashes (three varieties), fruit	28
Pumpkins, fruit	21
Citrons, fruit	21
Watermelons, fruit	10
Muskmelons, fruit	2
Corn, ears	196
Beans in the pod, quarts	13
Peas in the pod, quarts	102
Potatoes, quarts	118
Carrots, used while yet growing, plants	70
Carrots, harvested, quarts	24
Beets used before maturity, plants	161
Beets, harvested, quarts	24
Parsnips, quarts	16
Early turnips, quarts	18
Late turnips, quarts	20
Cauliflowers, heads	17
Cabbages, heads	184

The produce obtained may be stated in another way: With the exception of potatoes, celery and cabbage, it kept a family of six matured persons abundantly supplied with vegetables all the year. In addition, much was given away, more especially of the early varieties, and in many instances much was thrown away, as already intimated. In other words, the produce

that could thus be obtained from an acre of land similarly situated would abundantly supply, with nearly all the vegetables named, nineteen families, comprising, in all, 114 individuals. And then the land was not forced to its full producing capacity, since the excess of some of the small and early varieties became so great that to grow more would only have increased the waste from throwing the produce away. In 1899 no account was kept of the produce grown, but it would be correct to say that it was in excess of that grown during the years mentioned, since during the season last named it supplied two families, one of five matured persons and the other of two matured persons, in addition to the produce which was given to neighbors and thrown away.

In growing the vegetables the ground was kept at work during all the season. The various crops were so planted that a second crop was started before the first had been removed. In this way, three successive crops were grown on much of the land every season, and in a few instances four crops. The following are some of the successions adopted: (1) Radishes, onions from seed, onions from sets, fall turnips. (2) Spinach, peas, corn, cabbage. (3) Peppergrass, potatoes, cabbage. (4) Radishes, peas, early cabbage, tomatoes.

The radishes and onions from seed would be planted at the same time, the latter in rows 15 inches apart, and the radish seed in rows between. As soon as the radishes were consumed, onions from sets were planted and used green. Then fall turnip seed was sown. The rows for corn were staked off 30 inches distant. Two rows of dwarf peas would then be planted, and from one to three rows of spinach or some other salad. In due time the corn would be planted, with early cabbage plants between the hills in the line of the rows. The early salads would be out of the way of the dwarf peas, the dwarf peas out of the way of the corn. The early cabbage would take care of themselves between the corn rows, and as soon as the peas were removed late cabbage were planted in the space between the corn rows, and these had the land to themselves as soon as the corn was removed. Thus it was that the land was kept producing in all the various successions. In selecting varieties, preference was given to those that were small and of a dwarfish habit. Those also are finer in the grain, and, consequently, more tender and delicious than the large and coarse varieties, a truth that is all too little recognized in practical gardeninz. For instance, preference was given to the early scarlet short-top radish among the radishes, and to the early Cory among the varieties of corn, and to the American Wonder among the varieties of peas. The shade arising from these plants is much less than from other larger varieties, and they also grow more rapidly and mature more quickly. Too much importance cannot well be attached to the selection of varieties in growing these crops in a close succession.

The ground was dug in the autumn with a spade. The second and third times it was dug, the pick was used in the bottom of each trench to loosen up the subsoil, and the spade was sunk a little deeper every year, thus bringing up a portion of the raw and unpromising sub-soil, and exposing it all winter to the weathering influences of air, sun and frost, and rain. The spade can now be sunk without any difficulty to its full depth in any part of the garden. As soon as dry enough in the spring, the entire surface is stirred with the rake or hoe, whether anything is planted on it or

not. The object sought is the retention of moisture. A few days after seeds are planted, the ground over them is stirred to destroy sprouting weeds and to retain the moisture, and this is sometimes done a second time. The surface of the ground between the rows is stirred frequently with a hoe, even though weeds are not present, to keep the moisture from escaping? No irrigation has been used, and not much hand watering during any season. Of course, much promptness was exercised in planting a crop as soon as the previous one had been removed. Scarcely any of the plants were ever started in a hotbed. All, or nearly all, were sown where they grew. The cabbage plants were obtained from seed sown somewhere on one side of the garden. They were thus always at hand when wanted for transplanting.

No artificial fertilizers were used, but farmyard manure was applied as follows: One large load or two small ones from the horse stable, and containing much straw, were used in banking the cellar in the autumn. This manure was removed in the spring to the rear of the garden, and in a sense composted, though earth was not admixed into it. This heap was made the receptacle for grass cut from the lawn and around the borders of the garden, and also the refuse vegetables when these could not be buried while green; but when it was practicable to bury them in the garden in the green form this was done, to hasten decay in the raw soil brought up from below. The waste water from the house, or at least much of it, as suds, was also conveyed to the compost heap. In the autumn the accumulation from this heap, much reduced by that time, was spread over the surface before the garden was dug. A portion of the wood ashes from the cooking stove were also spread over the same, after having been bleached, the residue going to the lawn.

It was interesting to note the changes that went on continually in the mechanical condition of the soil. When the sub-soil was first brought up, it was a yellowish red in color, and was more or less tenacious, because of a peculiar clay content in much of it. This gradually became darker in color, and more friable; hence the fine mechanical condition of the garden at the present time. No one knows sufficiently the value of vegetable matter to the soil of Minnesota when judiciously added to them. It was also interesting to note the slow decay of vegetable substances put into the soil, as compared with the same in damper and warmer climates, a truth the value of which is beyond all estimate to the future of our agriculture.

One-half of the garden will henceforth be devoted to the production of small fruits, particularly strawberries and red and black raspberries. These are among the easiest grown in the line of small fruits, and none but the hardiest varieties will be used. The object is to obtain a sufficient supply of these, and at a minimum of labor expenditure. It is thought that the other half of the garden will now supply vegetables enough for two families, omitting altogether potatoes and celery.

It was not intended that the experience in handling this garden should be held up as a guide to the farmer in his operations when growing vegetables for his home. With the farmer land is so plentiful that he can grow his garden supplies with less labor. But the results should encourage the artisan and the laborer in towns and cities to cultivate land that may appertain to the dwelling in which he lives. Even the space of one rod square may be made to yield vegetables of the small varieties to an extent that will astonish the grower.

Alarmists sometimes write and talk about a shortage in production that the world will some day have to face. That day, if it ever comes, is far, far away. Put the population of Minnesota at 2,000,000. Till enough land as this garden was tilled to supply this population with vegetables, omitting celery and potatoes, and perhaps cabbage, and it would require but 17,544 acres of land. Put the acreage of Minnesota at 53,000,000. Devote one-half of this area to the production of garden products, and till it as this garden was tilled, and it will supply with twenty-five or twenty-six kinds of vegetables the year around, 3,021,000,000 of people, or about one-fifth the number now living on this entire globe.

BEST VARIETIES OF TREES FOR STREET PLANTING.

WYMAN ELLIOT, MINNEAPOLIS.

The subject assigned to me is one that should receive thoughtful attention by every person that is a lover of city, town, village or roadside adornment. There are many varieties and sub-varieties of our native trees that are specially useful for street and ornamental planting. We will confine our attention to a few of the most common varieties, in the order in which they are most popular with tree and landscape planters.

First and foremost is the elm (Ulmus americana). No tree can surpass this for its beautiful proportions. In old trees, especially, from the wide spreading buttress-like roots to the wide spreading branches, the curvature is beautiful and graceful in the extreme. Soil conditions seem, however, to give variety to the outline. It is a rampant grower in moist soils, and has a remarkable power of adaptability in all kinds of locations and exposures. The rapidity of its growth adapts it to artificial planting where shade is soon wanted. It is a great favorite with all shade tree planters and when properly and often transplanted while young, it is a tree very sure to live when properly planted. There are two other varieties of the elm native of our state that are often used for street planting, the slippery, or red, elm (Ulmus fulva) and the corky white elm (Ulmus racemosa). These trees do not grow as large as the white elm, but more compact in growth of top. Their wood is much tougher and firmer grained, valuable for many purposes where strength is desired. They make fine specimens for park and lawn planting.

There are three other varities of the elm family that are valuable for planting in large grounds to give added effect by variety of tinting of foliage and symmetry of form.

First. The Wahoo, or winged, elm (Ulmus alata) is of southern origin and a small growing tree that has not been very much used for planting in the northern states. If found hardy it would be a valuable acquisition.

Second. The English elm (Ulmus campestris), as its name indicates, is of foreign origin. This is a fine growing tree somewhat different in form of growth and foliage from our American white elm, and a valuable tree where variety is desired. The Wynch elm (Ulmus montana) resembles the slippery elm in its manner of growth and is a very popular tree wherever it has become known, especially in Europe.

The hackberry (Celtis accidentalis) strictly speaking is not an elm, but somewhat resembling the corky white elm in manner of growth, but of lighter foliage, which comes into leaf later than the elms. It has a compact,

uniform top, and in place of winged seeds, like the elm, it has drupes, or cherry seed, that remain on the tree nearly all winter. The hackberry will grow on the poorest, most arid soils, but flourishes best in rich and moist ground. It is a very straight, symmetrical growing tree, very well adapted to street and ornamental planting.

The maples, of the genus Acer, are very common trees, well adapted to street planting when properly cared for by close pruning when young. These trees are not as popular with a large proportion of tree planters as the white elm, but when quick effect is desired they are very useful. The commonest species is the red, or swamp, maple (Acer rubrum). This and the white maple (Acer dasycarpum) and the sugar maple (Acer saccharinum) are the principal trees of this species that are useful for street planting; more especially the latter is used for parks and home grounds. The red maple is often called white maple, and the two trees are frequently confounded, but they are easily distinguished by the young twigs—one turns red, the other green—and by the silvery whiteness of the under side of the leaves of the true white maple. They are easily propagated from seed, making a rapid growth when young. Proper pruning must be given to guard against crotches or long branches, which are often broken by strong winds. For planting in the prairie country no tree is more highly prized than this, as by its fast growth it gives a quick return in valuable fuel.

The most valuable of all the species is the sugar maple for domestic uses. This tree when young is very symmetrical, and with age takes on different forms of growth, some of which are very pleasing to the view. It is better adapted to ornamental than street planting. It requires a deep, rich soil, not subject to drouths, to give it its most beautiful outline and majestic growth. Old trees of this and other varieties often commence dying (like old men) at the top, but by severely cutting back the main trunk and shortening in the remaining branches new growths are encouraged, which renews the vigor of the tree. Many times valuable old decaying trees are by this means saved or their lives prolonged, which, if left unpruned, would in a few years become unsightly, and only fit subjects for the wood pile. On the west shore of Wayzata bay at Lake Minnetonka, is a striking example of the effect of this kind of treatment of old trees. There is a large sugar maple that the Hon. C. M. Loring, of park renown, had cut back, and by a little care in pruning and shaping the young growth, the tree has become flat on top, its branches broadening out, making it one of the finest specimen trees on the shores of this beautiful lake.

The Linden, or basswood (Tilia americana), is very much preferred for street planting to the European linden (Tilia europæa). It is not a very popular tree at the present time, on account of its foliage being eaten by caterpillars, which gives the tree a ragged appearance. Our native linden is well adapted to park and boulevard planting, where variety of leaf and form of outline are desired. Its foliage is dense, and it resists our hot summers better than the European linden. It is usually propagated from seed, but by some it is layered or mounded, and when the young shoots are rooted they are detached from the original tree and planted in the nursery for development.

The white ash (Fraxinus americana) and gray, or blue, ash (Fraxinus quadrangulata) are quite popular for shade and ornamental purposes. These trees are easily transplanted and need little care in pruning to form a symmetrical, well balanced top. They prefer shady, moist soils for their best

development. They prosper less in barren, bleak locations. Oftentimes the black, or water, ash (Fraxinus sambucifolia) is confounded with the gray, or white, ash, which, from its natural habitat, in low, swampy land, is not a good tree for street planting. The white ash is a larger growing tree than the blue, or gray, ash, preferring deep, loamy, clay soils, while the gray ash flourishes well on lighter, sandy soils. The wood of the former for timber is one of the most valuable of this group of trees. They are easily grown from seed, which needs gathering in the fall of the year and planting at once, or stratifying in sand for planting in the spring.

If I close without saying anything about the box elder (Acer negundo) some will ask, why was this tree left out of the list of valuable trees for street planting? I know it used to be a very popular tree with planters in tree claim days, on account of its fast growth when young; but experience has taught us that it is not a fast growing tree after the first ten years, and it is more subject to attacks from insects than the other trees named. It is continually shedding its foliage through the season, making it a very undesirable tree for city street planting.

Then there is the cottonwood (Populus angustifolia). It is a tree that used to be very popular in the early days of shade tree planting in our state, but it is fast being discarded as a nuisance at the time of shedding its cotton seeds, which is very disagreeable to many.

There are several other varities of trees that are worthy of consideration, but I have already made this paper longer than I intended, and have said in an imperfect manner enough for the present.

Mr. Wheaton: In the list of trees recommended by Mr. Elliot for street planting, I suppose the recommendation was general. I wish to take exception to one tree mentioned in the list, that is the sugar maple. I lived where the sugar maple grew, and when I went out on the priaries of western Minnesota, I thought I would like sugar maples, but they were not a success. I was not the only one to try them, so I would not base the failure on my own experience. The sugar maple will not stand on the prairies in western Minnesota according to my own experience and the experience of others. The wind will kill the trees; they will kill down to the ground; they will do nothing unless they have protection. I set out quite a number of trees, but they all died. They were protected by evergreens and other trees, and some of those maples protected are growing, but all the rest are practically dead. I know one man in our vicinity who set out, I think, ten acres of maple, and every single tree died. I do not think they ought to be recommended as a street tree for general planting.

Mr. Elliot: How does the swamp maple or the red maple do on the prairie.

Mr. Wheaton: That does all right.

Mr. Elliot: I did not say anything about the sugar maple being adapted for prairie planting. Unless it has protection on the prairie by some other tree, it will not do to plant there.

Mr. Harris: The sugar maple, as a street tree, is very short lived, but where it is grown in a grove it does perfectly.

The President: I had a grove on my farm, and there was about an acre of sugar maples, and I never saw trees grow more perfectly than those did; there was not another tree in the grove. They were thick, close together like a thick clump of trees.

Mr. Jewett: There is a certain kind of tree I have seen in the park at St. Paul. It is a beautiful tree, and I have been told it would take the place of the cottonwood, and that is the Carolina poplar. It is a beautiful tree and a rapid grower. I do not know why we have not got it, because the tree is perfectly hardy.

Mr. Moyer: The Carolina poplar is the cottonwood.

Mr. Jewett: They claim it is a distinct variety and it grows no cotton.

Mr. Philips, (Wis.): Several of the nurserymen in our state have been planting the Carolina poplar, and it is never taken for our cottonwood. They are a beautifully shaped tree, but they are different from the cottonwood. They are setting them at a good many different places.

Mr. Underwood: There is a difference in cottonwoods. They undoubtedly belong to the cottonwood family, but they are entirely distinct from the cottonwood of the Mississippi river. They are a very rapid grower, although our Mississippi river cottonwoods grow fast also. But there is a variety of the cottonwood known as the Carolina poplar, of which we have grown a good many young trees. I have never seen any large trees, but they are quite easily distinguishable from the ordinary cottonwood.

In regard to the maple. We have passed through a very severe experience with the hard maple and with the soft maple, as well. I think the maples demand different culture from that which they generally receive, especially in street planting. I think all trees need to be planted with a view to furnishing moisture, and that is particularly true of the maple. The soft maple will die down in the top as badly as any tree we have and the hard maple will kill back if they do not have enough moisture. If you want to have a hard maple tree do well anywhere the body should be protected from the sun by wrapping it, or let it kill down and come up again from the sprouts and grow up in a natural top. Besides that the roots must have plenty of moisture. They must be planted in such a way that all the water falling in the immediate vicinity shall be available for the trees, and then the ground should be kept loose on top so that the water can get in. Our hard maple grove came near perishing for lack of moisture, simply because we let the grass grow and cut it down and kept the ground very tidy. Now we leave the leaves on the ground and do not rake anything off, but keep conditions the same as exist in the woods, and I feel as though we were doing the right thing.

Mr. Moyer: I think the hard maple is a difficult tree to grow on the prairie, but thirty miles from where Mr. Wheaton lives there is a fine grove of hard maple.

Mr. Secor (Iowa): The sugar maple is a native of Minnesota. I had a little experience with the maple. I had two varieties of sugar maple; one is the native western variety, and it is a magnificent tree and perfectly hardy, while the sugar maples we brought from New York are not hardy. I would not recommend eastern or southern trees. That is also true of the red maple. Some ten or fifteen years ago I got one hundred trees of the red maple. I had been accustomed to them when a boy in the east. I have not got a single tree living more than four feet high today. Just one or two are barely alive, while our soft maples of the west are entirely at home. So I believe it makes a difference where our seeds come from. I would get the seeds from the extreme northern limit, and if we do that I do not see why the sugar maple will not grow in Minnesota.

Mr. F. L. Marsh: We find hard maples growing along the western border of the river courses. The hard maple grows to the border of the clay soil skirting this whole river bed, but never running into it. The white maple grows on the low ground. It succeeds well in black sandy soil, but the hard maple is confined exclusively to the clay soil. We find the same thing in the town of Hassan, in Hennepin county. As soon as you change to a sandy subsoil the maple shows it is not suited, and there are very few that grow on comparatively sandy land, while on clay soil they will grow more rank and thrifty.

Mr. Underwood: Don't you recognize the fact that in clay soil there is more moisture? That is what makes the difference. In the sandy soil there is no moisture. It is so all over Minnesota where we find our maple timber, and over in Wisconsin where they cut thousands of cords of maple wood, you find it growing in clay soil, where there is plenty of moisture.

The President: Mr. Marsh will find that the condition he mentions holds good all the way from Hassan to the edge of the former Big Woods. He will find the home of the hard maple is in clay soil that retains moisture well, but where it has natural drainage, sand or gravel underneath, the hard maple will not flourish.

Mr. Marsh: The sandy soil of the river is not an ordinary light soil, but it is mixed with clay. As a rule water is within a short distance of the surface, from eight to ten feet, and while the soft maple grows there the hard maple does not. I have one tree that apparently grew well in sandy soil, but on examination I found the roots were in clay.

Col. Daniels: I will say that the park commissioners of Washington have given up the soft maple. It grows well for a time and then breaks down. The hard maple is a magnificent tree; the elm is a magnificent tree. The hard maple extends up the valley of Virginia, but down in the valley they do not do anything with the hard maple.

Mr. Moyer: One speaker referred to the red maple. I was not aware that it was found in this state. Mr. Harris stated that one tree was found near La Crescent. When we speak of the soft maple we mean the silver maple. Reference has been made today to the red maple, or the swamp maple. I would like to know whether any one has seen it grow in Minnesota in a state of nature.

Mr. Harris: The tree I mentioned was very distinct from other maples. I believe within the last year and a half it has been cut down and used for fire wood.

Mr. Older: This is not so very important. It is my opinion that there are thousands of acres of hard maple growing in Minnesota. In the southwestern corner there are some hard maple trees that have been transplanted on dry loamy soil, and they are growing nicely, but they are difficult to grow and keep growing.

Mr. Taylor: I have black walnut that are doing remarkably well.

The President: Do you think they grow well enough to do for street ornamentation.

Mr. Taylor: I presume that would depend on the soil and location.

Mr. M. P. McColly: In regard to the growing of hard maple, I live in the hard maple belt, and years ago my father planted a number of hard maple shade trees, and as Mr. Underwood stated, those that were exposed died, but those that were sheltered grew nicely. In pastures where grass is growing around the trees the maples are dying. It is become a question of locality. We are right in the maple belt, but only seven or eight miles east of us you cannot find a maple, so I think we must have clay subsoil to grow the maple and must have shade and water to keep them growing.

Mr. Clark: Last year I read a paper about growing trees in Dakota, and Mr. Underwood asked me a question about evergreens in Dakota. I did not know anything about them, but I want to say that this fall, in October, I was going up the I. & D. division of the Northwestern road from Salem to Huron, and in that part of South Dakota it was very dry this past season, their crops were almost a complete failure, and I noticed one nice batch of evergreens near the railroad track, about an acre of them, and they were doing better than they did a year ago. I keep my eye on those trees, I go up there twice a year, and from what I have seen there and at one or two other little places, I think the evergreens are going to prove a better thing for the dry country than any deciduous trees.

The President: What kind of evergreens are they?

Mr. Clark: I cannot say; I am not posted on evergreens. They seem to be a mixture.

WISCONSIN STATE HORTICULTURAL SOCIETY, ANNUAL MEETING, 1899.

FRANK VAHNKE, DELEGATE, WINONA.

The Wisconsin State Horticultural Society met at Madison, February 6, 7 and 8. President Franklin Johnson opened the meeting Tuesday morning with a cordial greeting to those present.

Your delegate was cordially received, made an honorary member for the year and invited to take part in the discussions.

Tuesday morning was a nursery session, and the program was well carried out. F. C. Edwards delivered an address on the nursery business from the grower's and agent's standpoint and the best way to conduct it. He said in part: The nursery should be located near a town with two or more railroads. The soil should be clay and sandy loam. He thought that it was not necessary to raise everything offered for sale. If Wisconsin nurserymen would supply the state, they must visit their customers at least once a year, and if stock has not grown, through the fault of the seller, supply new without charge, and in all things make the interest of the buyer their own.

L. G. Kellogg, on the question, "Shall Nurserymen Buy Southern or

Eastern Stock?" showed, if planters should receive southern or eastern stock, that only a small percentage would live during the first season, and none would live long enough to bear fruit, and so the planter would be discouraged in fruit growing, to the cost of the home nurseryman also; then the planter would say, "It will make no difference where I buy my trees, at home or abroad, they all die." Therefore, the Wisconsin nurserymen should only sell home grown stock, and if short on some kinds buy them of a nursery at home or in the northern states.

A. D. Barnes made some suggestions about growing nursery stock. He recommended combination of large commercial nurseries on suitable soil to grow all the stock needed in the state and selling it at uniform, reasonable prices.

D. C. Converse said he considered the tree man a godsend to Wisconsin. Every good tree or plant sold helps the sale of more stock. The thing needed is legislative protection, which shall register and license every nursery doing business in the state.

A. L. Hatch spoke on the best plan to protect the planter from fraud. He said: "Educate the people and do this by the co-operation of the local press. The success of local planters who buy their trees of reliable home nurseries is an object lesson that will pay. Many might be reached by the farmers' institutes better than by any other means."

The Tuesday afternoon session was devoted principally to short talks on small fruits. Most of these were from young men. M. S. Kellogg had an interesting paper on the "Planting and Care of Strawberries." He gave his method of care and culture of strawberries. The first essential is rich soil, which has been planted to some hoed crops for at least two years in order to destroy the white grubs. Set plants three by two feet for home use, four by one and one-half or two feet for market gardens. Plants should come from a bed that has not fruited. Plants should be set as soon as the ground is warm enough to start growth. He said that in general the matted row system was preferable to hill culture.

Mr. John Herbst had a paper on the small fruit outlook at Sparta. He contended that growers should aim to produce nothing but the best, securing thereby the best yield and the best prices. He reviewed conditions and crops for some years past, and from the present outlook he predicted an unusually prosperous season for small fruit growers.

He said that the past year there had been shipped from Sparta 85,000 16-quart cases of small fruits, which sold for $80,750. Cost of picking $20,400; for crates, freight and commission, $20,050. The growers received $32,300.

Professor Goff gave a short talk on "Raspberries," explaining technically the form of growth and what was contained in the winter wood. Prof. Goff said his experiments had shown that an increased yield results from pinching canes at two feet, but at one foot or eighteen inches the result is detrimental. Pinching the chief cane and then the laterals is also damaging. When amount of work is considered, the advantage of pinching back is not very great.

Tuesday evening session was presided over by B. S. Hoxie, the president of the Wisconsin Forestry Association, who delivered a short but interesting address.

S. M. Owen, the editor of the "Farm, Stock and Home," of Minneapolis, Minn., then delivered an address on "Forestry of the Old World as Com-

pared with American Methods," his recent travels in Europe having made him familiar with laws and practices there. He spoke particularly of forest preservation in Switzerland.

Wednesday morning. The Tree and Plum Session.

Professor Goff's paper on "Plum Growing from a Commercial Standpoint," was listened to with much interest. The Wyant, he said, was the most valuable of our native plums. The Ocheeda also has succeeded here and promises well, and the Quaker, Mankato, Piper and Cheney are good varieties but not equal to the first two mentioned.

Martin Penning's paper on the Surprise plum was read by Secretary Philips, and gave the history of the variety.

O. M. Lord, of Minnesota City, Minn., who was not able to be present, had sent a long and valuable paper on the "Value of the Native Plum and Its Improvement."

Secretary Philips submitted his report of the trial orchard at Wausau. He said that nearly all the trees had passed through the past winter uninjured, in top and root. Mr. Philips showed a large plat indicating where each tree is located and marked to show where it came from and when set out. Out of 1,200 trees only twenty-nine have to be replanted, in spite of the fact that the thermometer at Wausau went as low as fifty-five degrees below zero. This trial orchard is certainly an object lesson not only to Wisconsin but to neighboring states also.

George J. Kellogg delivered an address on "Top Grafting Apple and Plum Trees." He said that much of his early work after bearing had failed, but with the Virginia crab as a stock varieties that were half hardy had succeeded after grafting when the limbs were small.

A. L. Hatch had a paper "What Can We do to Make Trees and Plants Live, Grow and Bear Fruit?" He said, first of all, to place plants and trees under conditions to meet all requirements. Choose right varieties, select able culture and protection. Apples suitable for the climate can always be produced, and it is not necessary to be always seeking new varieties. The Fameuse apple is just as good as when first brought to notice. The site must include proper soil, and culture will be unavoidable without a balanced fertilizing ration and sufficient moisture. Spring pruning he thought better than pruning at any other time.

The memorial service was a very appropriate tribute to the memory of J. C. Plumb, M. A. Thayer, F. W. Loudon and P. M. Gideon. President Whitford, of Milton College, paid an eloquent tribute to the memory of J. C. Plumb. Your delegate had the privilege of paying a tribute to Mr. Plumb also. Mr. Owens spoke generously and with feeling of the work and character of Mr. Thayer. Prof. Goff spoke of Mr. Loudon, and Mr. Philips spoke of Mr. P. M. Gideon in very kind words.

Franklin Johnson, of Baraboo, was re-elected president; J. L. Herbst, of Sparta, was elected secretary.

The Thursday evening session, which closed the meeting, was in charge of the Short Course students of the College of Agriculture, and they furnished an interesting entertainment, consisting of musical selections and addresses.

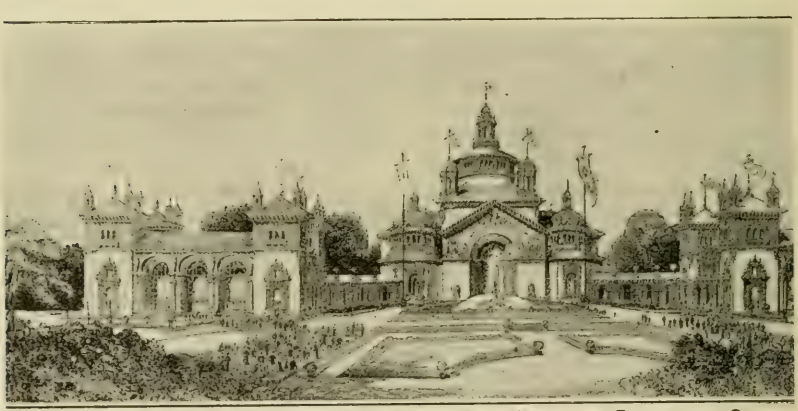
The exhibition of fruit was omitted for the reason that the fruit crop had been a failure the past year.

HORTICULTURAL BUILDING AT PAN-AMERICAN EXPOSITION—

TO BE HELD AT BUFFALO, N. Y., IN 1901.

The three buildings for horticulture, graphic arts and forestry form a picturesque group. The largest of these, the horticultural building, stands between the other two. The forestry building is on the north side and the graphic arts on the south. Arcades connect the three buildings, forming in front a semi-circular court. Between the arcades the ground rises slightly to the level of the Fountain of the Seasons.

The area of the horticultural building is 45,000 square feet. The graphic arts and forestry buildings each cover 30,000 square feet, and are similar in design. In plan, the horticultural building is square, with central lantern, rising to a height of 240 feet at the intersection of the four arms of a Greek cross, which includes in its angles four small domes. On the center of each facade is a deeply recessed arched entrance.



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A GLIMSE OF HORTICULTURAL HALL, AT BUFFALO EXPOSITION.

The graphic arts and forestry buildings have four corner towers, and on the east facade a vaulted loggia of three arches forms the main entrance. Above the red roofs of Spanish tile, numerous lanterns, pinnacles, and Venetian flagpoles, from which float gaily colored banners, add a festive picturesqueness to the sky-line.

The broad white wall surfaces are ornamented with colored bas-reliefs; arabesques of twining vines of fruit and flowers, among the branches of which are children and birds, decorate the numerous pilasters of the facades and arcades. Above the eastern entrance of the horticultural building are two colored compositions representing Ceres, the goddess of the harvest, bearing in her arms a sheaf of golden wheat. Her chariot is drawn by three lions led by Flora and Primavera.

The decoration of the graphic arts and forestry buildings is chiefly confined to the vaulted ceilings of their loggias, where the brilliantly colored decorations remind one of the famous example of the Villa Madama.

FRUITS FOR WINTER USE.

MRS. G. H. PRESCOTT, ALBERT LEA.

(Read before the Southern Minnesota Horticultural Society.)

This is a question which confronts us every summer and must be practically met, or we shall regret it the following winter.

Apples must be picked carefully, wrapped in paper, packed in barrels and put in cold storage.

Currants for winter use, if canned while green, make excellent pies. Of course, everybody makes jelly of ripe currants. For the sake of variety I pick currants when half ripe and perfectly dry, crush with a potato masher, strain through flannel and then to one pint of juice add one pint of granulated sugar, stirring until entirely dissolved, then put into glasses and set in the sun until thickened. This cold process insures the currant flavor, which is often practically lost in boiling. Years ago housekeepers did not consider themselves ready for winter without several jars of "dyspepsia breeding" preserves. Very little canning was done. Expensive cans were one reason, and ignorance of the proper methods of canning another. I think the reverse is the rule now. Cans of all sizes are plentiful and cheap, and each housekeeper has a good way of successfully canning fruits for winter.

I will give my way of preparing strawberries, red and black raspberries and blackberries. Pick the perfectly ripe berries in the middle of the day while they are very dry, fill the cans full of the fruit, wet a folded cloth, and laying this in the bottom of a kettle place the filled cans on it; have ready a hot syrup made of granulated sugar and fill the cans with the syrup; then fill the kettle with hot water. Let it boil until they are well heated through. Be sure the cans are full to the brim. Put on the covers, screw them tightly and lifting from the kettle wrap them in brown paper to keep them from the light.

To can tomatoes, select ripe tomatoes, pare, cut in thick slices and remove as many seeds as convenient. Put in a porcelain kettle and cook nearly enough for the table; put in glass cans while hot and screw the covers on tightly.

For apple sweet pickles, pare, quarter and core one peck of sweet apples. Take three pounds of sugar and one quart of vinegar; boil, skim and add a teaspoonful each of cloves, cinnamon and allspice carefully tied in a bag made of thin cloth. Cook the apples in this mixture until tender. Put into cans so they will keep better than in jars. Peaches are excellent pickled and canned in this way. Weigh the peaches after they are pared. To every ten pounds of fruit, use four pounds of sugar, one quart of vinegar, one tablespoonful each of whole cinnamon, mace and cloves. Put the sugar into a porcelain kettle with a teacupful of hot water, boil and skim, and then add the vinegar and spices tied in a thin sack. Put the peaches in this liquor, and when they are thoroughly cooked fill the cans quite full with the peaches and syrup. Screw on the covers while hot. I do not like dried fruit, consequently do not dry any.

UNREPORTED ADDITIONS TO THE SOCIETY LIBRARY.

A. W. LATHAM, LIBRARIAN.

875	N. J. State Hort. Soc'y An. Rep.		1899
876	N. J. Agri. Exp. Station An. Rep		1898
877	American Gardening,	Vol. 19	1898
878	Gardening,	Vol. 5	1896-1897
879	Forest Leaves		1895-1898
880	Meehan's Monthly,	Vol. 8	1898
881	Meehan's Monthly,	Vol. 7	1897
882	Gardening,	Vol. 4	1895-1896
883	The Market Garden		1895-1898
884	Amateur Gardening		1894-1897
885	American Gardening,	Vol. 18	1897
886	Gardening,	Vol. 6	1897-1898
887	The National Nurseryman,	Vol. 2	1894
888	The National Nurseryman,	Vols. 4 and 5	1896-1897
889	Vick's Magazine,	Vols. 18 and 19	1894-1895
890	Vick's Magazine,	Vols. 20 and 21	1896-1897
891	Park and Cemetery,	Vols. 5 and 6	1895-1897
892	Park and Cemetery,	Vols. 7 and 8	1897-1899
893	Irrigation Age,	Vol. 9-10	1896
894	Gentleman Farmer,	Vol. 4	1998
895	Wisconsin Horticulturist,	Vol. 2	1897
896	Wisconsin Horticulturist,	Vol. 3	1898
897	The Forester,	Vol. 3	1897
898	U. S. Exp. Station Record,	Vol. 2	Nos. 1 to 12
899	U. S. Exp. Station Record,	Vol. 4	Nos. 7 to 12
900	U. S. Exp. Station Record,	Vol. 7	Nos. 1 to 6
901	U. S. Exp. Station Record,	Vol. 7	Nos. 7 to 12
902	U. S, Exp. Station Record,	Vol. 8	Nos. 7 to 12
903	U. S. Exp. Station Record,	Vol. 9	Nos. 1 to 6
904	U. S. Exp. Station Record,	Vol. 9	Nos. 7 to 12
905	U. S. Exp. Station Record,	Vol. 10	Nos. 1 to 6
906	Canadian Horticulturist,	Vol. 19	1896
907	Canadian Horticulturist,	Vol. 21	1898
908	Canadian Horticulturist,	Vol. 20	1897
909	Irrigation Age,	Vols. 7 and 8	1894-1895
910	Irrigation Age,	Vols. 11 and 13	1897-1898
911	Florida State Hort. Soc'y, An. Rep		1898
912	Minn. Legis. Manual		1899
913	Mass. Agri. Exp. Station		1899
914	Mass. Agri. Exp. Station		1898
915	Mass. Agri. Exp. Station		1897
916	Columbus, O., Hort. Soc'y, Vol. 13		1898
917	Minn. Agri. Exp. Station, An. Rep.		1898
918	Mo. State Hort. Soc'y, An. Rep.		1898
919	Am. Assc. Nurserymen, An. Rep		1898
920	Iowa State Hort. Soc'y, An. Rep		1897
921	Iowa State Hort. Soc'y, An. Rep.		1898
922	Soc'y of Am. Florists, An. Rep.		1898

923	Mo. Botanical Garden, An. Rep	1899
924	Quarter Acre Possibilities, by F. H. Nutter	
925	N. Y. State Agri. and Hort. Soc'y, Reports.	1897
926	Kans. State Hort. Soc'y, Annual Report.	1897
927	Kans. State Hort. Soc'y, Annual Report	1898
928	Mich. State Hort. Soc'y, Annual Report	1895
929	Mich. State Hort. Soc'y, Annual Report	1896
930	Mich. State Hort. Soc'y, Annual Report	1897
931	Manitoba Farmers' Institute	1898
932	National Nurseryman	1898
933	U. S. Experiment Station Record, Vol. 8	
934	Colorado Board of Hort., An. Rep	1898
935	Va. State Hort. Soc'y, An. Rep	1899
936	Chemistry of the Soils and Fertilizers, Prof. Henry Snider	
937	Conn. Agri. Exp. Station, An. Rep	1898
938	Mass. State Board of Agri., An. Rep	1898
939	Ky. Agri. Ex. Station, An. Rep	1897
940	Fruits of Ontario	1898
941	Forest Preservation, 4th An. Rep. Minn. Fire Warden	1898
942	Canada Exp. Farms	1898
943	Am. Assc. of Nurserymen, An. Rep	1899
944	Ontario Fruit Exp. Station, An. Rep	1898
945	Ontario Fruit Growers' Assc. An. Rep.	1898
946	Peninsula Hort. Soc'y	1888-1897
947	The Western Hort. Soc'y, An. Rep.	1898
948	The Western Hort. Soc'y, An. Rep	1899
949	Peninsula Hort. Soc'y, An. Rep	1899
950	Year Book, Dept. of Agri	1898
951	Kans. State Hort. Soc'y, An. Rep	1898
952	State Board of Hort., California, An. Rep	1897-8
953	Board of Horticulture, Oregon, An. Rep	1899
954	Nova Scotia Fruit Growers' Assc.,An. Rep	1898
955	Nova Scotia Fruit Growers' Assc.,An. Rep	1899
956	Nova Scotia Fruit Growers' Assc.,An. Rep	1897
957	Geological and Nat. History of Minn., Winchell, Vol. 4	1899
958	Principles of Plant Culture, E. S. Goff	1899
959	Minnesota Plant Life, C. MacMillin	1899
960	R. I. Agri. Exp. Station, An. Rep	1898
961	W. N. Y. Hort. Soc'y, An. Rep.	1896
962	W. N. Y. Hort. Soc'y, An. Rep	1897
963	W. N. Y. Hort. Soc'y, An. Rep.	1898
964	W. N. Y. Hort. Soc'y, An. Rep.	1899
965	Ga. State Hort. Soc'y, An. Rep.	1899
966	Oregon Board of Hort., Biennial Rep.	1897-8
967	N. C. Agri. Exp. Station, An. Rep.	1898-9
968	The Peach, Kans. State Hort. Soc'y	1899
969	A B C of Potato Culture, T. B. Terry	1893
970	A B C of Strawberry Culture, T. B. Terry	1890
971	Dept. of Agri., U. S., An. Rep	1899
972	Wis. State Hort. Soc'y, An. Rep.	1899

ECHOES FROM FARMERS' INSTITUTE.

A. K. BUSH.

"This list of 15 members secured at one meeting is a record breaker, but it is only an index of the Montevideo Institute, which was attended by more than 1,000 people.

"The institute was a success from start to finish, in every respect. The subject of 'Growing Evergreens on the Prairies,' was discussed the first day by the horticulturist, also, 'How to Grow and Use Strawberries,' by T. B. Terry.

"The second day 'How to Grow Plums and Small Fruits' was presented as best we could. As a large number of ladies were in attendance in the afternoon, we told them 'How we Grow Sweet Peas and Roses in Abundance' by planting the same in rows in the garden, when the soil is rich and mellow, using a line of three-inch porous drain tile just under the plants, through which water can be used when needed for irrigation. This tile is very cheap, and affords a most practical method of watering such plants.

"I was invited by Judge Moyer to visit the trial station which is under his care and located on his farm about two miles out of the city. I found everything in most excellent condition and making a very good growth, considering the location, which is on the open prairie. Here the golden willow shows its value as a windbreak and snowbreak for this country. The ash, elm, hackberry, etc., are doing exceptionally well as soon as 'forest conditions' are established.

"The Russian poplar is the most vigorous grower of all trees in this country. We were shown sprouts which have grown in a single season from seven to eleven feet—making timber about as fast as one can haul it from a distant wood lot, and very much cheaper.

"Every farm in Minnesota should have five to ten acres of trees growing, which would soon supply the home demand for fuel, protect the surroundings, make the family and stock more comfortable and increase the yield of all farm crops by their protection.

"These trial grounds also contain about two acres of evergreens, largely Scotch and Austrian pines, which came from the Department of Forestry, Washington, D. C. They are growing without protection and doing fairly well, but would do much better, in my opinion, if well protected with willow hedges. These demonstration stations are of great value to the state.

"I spent an hour or two in the home grounds of Mr. Moyer, in the city. They are beautifully located on the crest of the hill, overlooking the city, river and country for miles in almost every direction. The location is such that the test is severe to all plantings, but all the trees, shrubs, etc., are in fine condition, due largely to the intelligent care given them, showing the possibilities of forestry in southwestern Minnesota."

Montevideo, February 4, 1900.

If I lived near the Twin Cities and owned forty acres of such lands as surround Red Wing, I should not hesitate to plant the same to a plum orchard, and fully expect net returns quite equal to a California prune orchard of same size. Why don't the fruit growers of Minnesota plant more plum trees?

I am "changing work" with other members of the corps, so horticulture is

getting a *full* share of time on the platform. Mrs. Laws, in her work, makes special mention of fruits; Mr. Terry talks on strawberries and evergreens; Mr. Greely on raspberries and evergreens; Mr. Trow, Gregg and others, lend assistance. I am doing all I can, but am talking for corn, potato and beef production, also.

Willmar, Feb. 8, 1900.

Secretary's Corner.

LIST OF THOSE SENDING NEW MEMBERS IN FEBRUARY:

A. K. Bush, Farmers' Institute, 37.
J. S. Parks, Pleasant Mounds, 1.
Ira Pasley, Ceylon, 1.

PATTEN'S GREENING A KEEPER.—"Have the Patten's Greening apple keeping in good shape yet up to this date."

Bederwood, February 2, 1900. ROLLA STUBBS.

NOT A COLD WINTER.—President Pendergast reports from Hutchinson, under date of February 13, a minimum temperature for the winter so far of —20° and four inches of snow. Peach trees ought to winter at his home without protection under such conditions.

AUXILIARY SOCIETIES IN 1900.—The societies thathave so far reported as auxiliary for the year 1900, are as follows:

Southern Minnesota Horticultural Society, 61 members; Meadow Vale Horticultural Club (Elk River), 14 members; South Dakota Horticultural Society, 18 members.

ANNUAL MEMBERSHIP FOR 1900.—At this writing, February 22, the roll of annual members for the current year stands at 592, which is 157 more than a year ago at this date. Would'nt you like to send just *one* new member and help spread the gospel of right horticulture, and bring the roll up to the 1,000 mark we have set?

THE WISCONSIN SOCIETY CHANGES SECRETARY.—The abundance of other cares has influenced A. J. Philips to lay down the burden of secretaryship in the Wisconsin Society, and his mantle has fallen on the shoulders of a young man, Mr. J. L. Herbst, of Sparta. We regret the retirement of Mr. Philips, with whom offiicial relations have always been of the most helpful and agreeable character, but we shall expect to see more of him now than ever.

PLANT SEEDS.—I have great faith in the *wholesale* planting of seedlings and *wholesale* fertilization of seeds. Don't stop to hand fertilize a few blossoms, but take large quantities of seeds raised in close proximity to large fruit—say, as I am doing, with the seed of the long-keeping Tallman Sweet, grown near the large, very hardy Wolf River. We will show you later on what Minnesota can do. J. S. PARKS.

Pleasant Mounds, Feb. 12, 1900.

From the Red River Valley.—My work in horticulture has been with many kinds of fruit, and my success has been beyond expectation, although you told me once that this valley would never be a successful fruit country. I know we suffer from late frosts in spring and early frosts in the fall, but we seem to suffer no more here from this than further south. The last two winters we have had little or no snow, and as a consequence rabbits have done less damage to trees—this winter, so far, no snow at all, and rabbits have found food elsewhere. Striped Anis and Hibernal fruited five years planted; most crabs fruited heavily; Martha, no fruit. Ole J. Hagen.

Hendrum, Jan. 3, 1900.

Making Nasturtiums Bloom.—In a *Ladies' Home Journal* paragraph, Eben Rexford says of nasturtiums, "In a too rich soil these plants make a rank growth of branches and produce few flowers." Having no choice but to plant our nasturtiums last spring in a sandy soil heavily enriched with barnyard manure, put on the previous fall, we got a growth so rank that my wife cut them back savagely, with slashes from a sickle pruning knife. They came on quickly, repeating their previously rampant growth, and again she slashed them back. Then they bunched out again and covered themselves with flowers. We never had better.

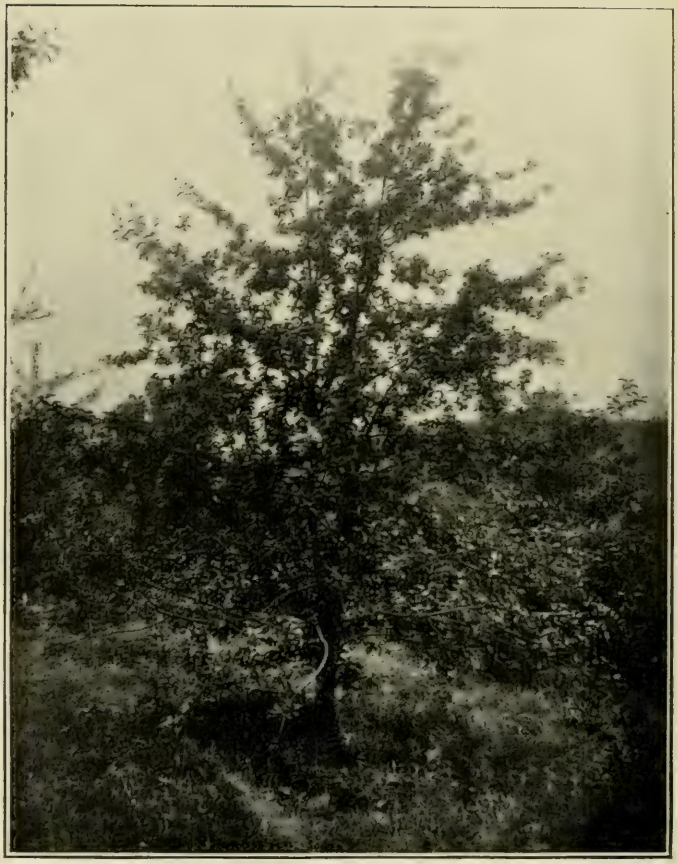
Prescott, Wis., Jan., 1900. Oliver Gibbs.

Gideon Memorial Committee.—President Pendergast announces the appointment of this committee, authorized by the late annual meeting of the society, as follows:

J. M. Underwood, Lake City, Wyman Elliot, Minneapolis, Prof. S. B. Green, St. Anthony Park, Col. J. H. Stevens, Minneapolis, Clarence Wedge, Albert Lea.

Suggestions along the line of work of this committee as to raising a memorial fund and its disposal are desired from any interested in the subject. How shall we raise the money, how much, and what shall be done with it to best commemorate the work of Mr. Gideon?

As Others See Us.—Prof. C. B. Waldron, in a bulletin just issued from the South Dakota Experiment Station, says: "I belong to a horticultural society of 700 members and attend their meetings every year. These men are for the most part practical farmers. I have often observed that it would be difficult to find in the whole state they represent another body of men of equal number so bright, clean, thrifty and enterprising. They would dignify any assemblage. They are not only the bone and sinew but the worth and brains of their commonwealth. I state the fact and offer no explanation. There must be some connection between men of such character and the things that occupy their attention." The bulletin from which this is quoted is entitled "Hints on Ornamental Planting" No. 41, and will repay reading on the part of all interested on the subject. Apply to the professor at Fargo.



THE OXFORD ORANGE.

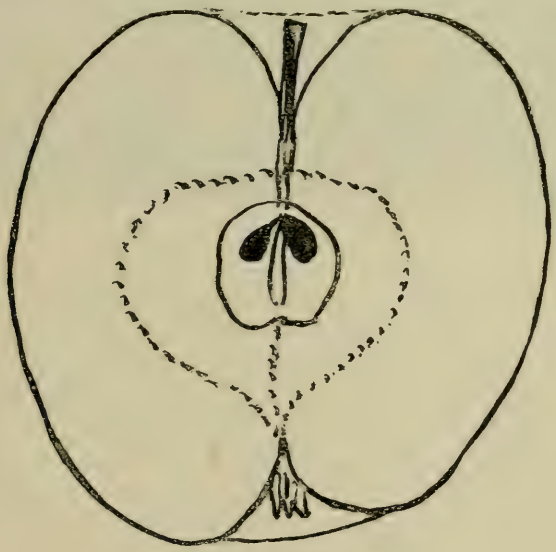
THE MINNESOTA HORTICULTURIST.

VOL. 28. APRIL, 1900. No. 4

THE OXFORD ORANGE.

J. S. HARRIS, LA CRESCENT.

The Oxford Orange apple is supposed to be a local seedling, of which only a few trees had been propagated. Thus far it has only been discovered in the orchard of Wm. Oxford, at Freeburg, Houston county, and of its history or origin very little is known. About twenty years since, Mr. Oxford planted a wagon load of trees that he had purchased from a local nurseryman, who soon after went out of business and removed from the state. No record was kept of the varieties, but among them were Duchess, Haas,



Oxford Orange.

Fameuse, Talman Sweet, St. Lawrence, Walbridge and several varieties of Siberian hybrids, and five or six trees of this unknown variety. It came through the winter of 1884-5 in as good condition as the Duchess, and better than most of the others. The tree is a fairly vigorous, symmetrical grower, and has so far been very free from blight. It is an annual and very full bearer.

The description is as follows: Size, 4 to 5; form smooth, roundish, slightly oblong, and often oblique; color greenish-yellow, shaded pale blush on the

sun side. The stem is medium short, set in a narrow cavity, russeted at the bottom; calyx closed, in a medium smooth, round basin; flesh, yellowish white, fine grained, tender; flavor, sub-acid; season, early winter; use, kitchen and market.

Mr. Oxford has a five years old orchard embracing two or three acres of land on the top of a bluff, south of Freeburg, Houston county. It is located

Mr. Oxford's Five-Year-Old Orchard.

about 1,100 ft. above the sea level and 400 ft. above the Mississippi river, and has good air and soil drainage. Soil a strong clay loam, over limestone rock. The varieties are Ben Davis, Jonathan, Babbit, Springdale, Mammoth Black Twig, Senator, Beach and some others, besides a number of newer northern varieties procured of J. S. Harris. The most of them were two years old when planted and have made a vigorous and healthy growth. They were not seriously injured last winter, and some of them fruited well the past season, carrying from a peck to a bushel of fruit each, and the fruit was of fine appearance. Mr. Oxford has now over one hundred varieties on trial.

TREE TOPS.—The hot sun on the south or southwest side of the apple tree and frequent freezing and thawing towards spring prevent a free flow of sap, and the limbs on that side are dwarfed; while on the opposite side the unobstructed sap causes a much more rapid growth, which by force of gravity and prevailing winds often causes the tree to lean to the northeast, frequently causing increased injury by sunscald. To balance up such tops requires the removal of many limbs on the north side. If instead of cutting off such limbs they are girdled at the right time, it will check growth, throw them into bearing and prove to the grower that girdling is not such a killing thing after all.—Dartt.

THE WINTER OF 1898-9 IN MY ORCHARD.

WM. SOMERVILLE, VIOLA.

The summer previous to the winter of 1898-9 was very dry, and the trees bore a heavy crop of fruit, and made little wood growth. They were in poor condition for such a severe winter. The fall rains were abundant, which moistened the ground to the depth of a foot or more; then the snow falling before the ground froze deep kept the roots from killing, while the moisture in the ground, to some extent, saved the tops.

The trees on our ground were but little injured, except as regards fruiting. The inner bark on almost every variety was colored, and the fruit buds on many kinds killed; others bloomed out, but for want of nourishment from an affected inner bark, the little apples dropped off.

Our fruit crop was very light, not exceeding 250 bushels, but we found a ready market for them at one dollar per bushel. While we had a few specimens of nearly every variety we grow, few of them made our market crop, which consisted largely of the Duchess, Striped Anis, Hibernal, Longfield, Patten's Greening, Wealthy and Duchess seedlings No. 4 and 8. The older Duchess and Wealthy trees bore a better crop than the younger trees did; the inner bark of the old trees was not so badly colored in consequence of not making much wood growth the previous summer. I have just finished thinning out the tops of our trees, cutting off the small limbs and limbs that cross each other to keep them from wearing and also from overbearing. I have not found a single tree that shows any signs of injury from the cold winter as this summer (1899) has healed all damage the winter had done. Even the semi-hardy varieties, such as Talman Sweet, Ben Davis, Grimes' Golden, Plumb Cider, etc., that are top-worked on Hibernal stocks are all right.

I am convinced that the fall rains that fell before the ground froze and the snow that fell afterwards was the salvation of our trees, especially of the semi-hardy. In proof of this, a few years ago I was in a portion of central Iowa, where they had not the fall rains nor the snow in winter, but the ground froze perfectly dry, they say, to the depth of five feet. The result is, there is a large percentage of their old trees entirely killed, and all seriously injured. Nursery stock there is all killed or seriously injured; also grape vines were all killed in many instances, even when covered. On my way home I had a pleasant visit with C. H. Patten, of Charles City, Iowa. I found his nursery stock but slightly injured, having had the same advantages of rain and snow as we had in Minnesota. I also had a pleasant visit with Mr. Gardner, of Osage, Iowa. He is so modest that we hear but little from him; yet it would pay any nurseryman to pay him a visit and look over his beautiful grounds, also the conveniences he has for raising evergreens, which he makes a specialty of, as well as nursery stock.

THE WINTER OF 1898-9 IN ITS EFFECT ON MY ORCHARD.

E. W. MAYMAN, SAUK RAPIDS.

The subject assigned to me is apparently not a difficult one upon first thought, and if the future effects are not to be considered at this time. As a means, therefore, of furnishing the desired information, I will first relate

the methods of protection practiced by me, commencing with bearing apple trees. Of these, I have about seventy trees, consisting of the Duchess and Wealthy; crabs, Early Strawberry, Briar's Sweet, Transcendent, Orange and Whitney's No. 20. My protection consists of a good mulch of old straw. No direct damage from the severity of the winter seemed apparent, yet as a result together with the continued severe cold in the spring, followed by a hail storm and frost about June 1st, about thirty of the above named trees, that bore a heavy crop of fruit the season previous, blighted badly directly after the fruit was set, the Duchess being the most affected. Those that did not bear any fruit showed no sign of blight and made a good growth.

Plum trees.—About thirty bearing trees received the same protection as the apples. Varieties: De Soto, Weaver and Rollingstone, all of which came through uninjured and all bore a very heavy crop, the largest in many years. About 150 apple and crab trees were planted in 1897-8, consisting of Duchess, Wealthy, Hibernal, Peerless, Patten's Greening, Northwestern Greening, Longfield, Walbridge, Malinda, and Martha and Hyslop crabs, also fifty plum trees planted as above, consisting of Rollingstone, Cheney, De Soto, Hawkeye, Wolf and Stoddard. For protection a mound of earth around each tree just before freezing and about six or eight inches of coarse manure before freezing. Result— four Peerless and one Longfield root-killed, and the Wealthy, whilst no wood seemed to have been injured, made a very poor growth the past season; all others not in the least injured. All of the young plum trees named came through without injury, and all except Forest Garden bore fruit. Apple root-grafts one year with a good mulch came through uninjured.

Grape vines, consisting of Brighton, Concord, Delaware, Agawam, Lady, Worden, Janesville and Moore's Early were pruned and laid down about Nov. 1, and covered by ploughing a furrow from each side. They came through uninjured, except one Lady and one Delaware root-killed. All the others, about seventy, bore a heavy crop.

Raspberries.—Cuthbert were laid down and a furrow turned over them. Result—about one hill in twenty had all the bearing wood killed, the others bore about half a crop.

Strawberries.—About half an acre, consisting of the following varieties for trial, all in the hill system, planted three feet each way, and after setting their runners about six inches from parent plant, all runners afterwards cut off once a week: Parker Earle, Captain Jack, Haverland, Lady Thompson, Bissel, Edgar Queen, Wilson and Glen Mary. Covered about Nov. 20th with about two inches of straw; uncovered May 12; result, plants uninjured. Lady Thompson, Glen Mary and Edgar Queen did well and gave a good crop of very large berries. The others above named did not do as well.

About three-fourths of an acre in matted row, consisting of the above named and also Brandywine, Bederwood, Jessie, Enhance, Bubach, Warfield, and Crescent, covered and uncovered about the same times as above stated, and all came through uninjured and gave an immense crop except Parker Earle, Captain Jack, Bissel and Haverland. These four varieties, I shall discard. Jessie, Warfield, Crescent, Enhance and Bederwood do the best with me in the order named.

Currants and gooseberries, with light protection, came through uninjured. In conclusion will state that though considerable snow fell during the winter, it drifted very much, some parts of the ground being bare and others being benefited. All my bearing fruit trees are planted on a southern slope and have been planted from ten to fifteen years. Young trees are on a northeast slope. The soil is a rich black loam, varying in depth from fifteen to thirty inches, part of which has a gravelly subsoil, and the rest has blue clay.

WAUSAU, WIS., TRIAL ORCHARD.

A. J. PHILIPS, WEST SALEM, WIS.

The week ending Nov. 4th, I spent mostly at the aforesaid orchard. I paid each tree a personal visit and gave many of them a kind word for their good behavior and fine appearance. To me there is much satisfaction in these interviews, as the trees cannot dispute anything I say. The growth of all since my June report is all I could ask. Then I reported that the principal losses were confined to a row of eighteen Newell trees, and that all would have to be replaced, but today, Nov. 3rd, I find that twelve of them have so far recovered that I have decided to give them another year's trial and replace only six.

One fact that is being taught here is that trees with an abundance of fibrous roots do not take hold and grow as vigorously as those with three or more large clean main roots with but few fibres. Another is that good two-year-old trees planted by the side of four-year-olds of the same variety need only about four years of growth and care to get ahead in size and appearance of their elder rivals; and still another is that grafts set where they are to be left to grow with roots unmutilated will outstrip the older trees in six or seven years and make better trees. These conclusions I have fully demonstrated in my own orchard.

Another thing for planters to heed is to plant the plat out square. I lost in a corner where the land is rather low and wet in the spring some ten cherry trees—more than in all the rest of the orchard. I will replace them (if I have charge) next spring but will raise the ground some and report the result later on. I find also that the Kaump apple tree stood last winter much better here than it did in southern Wisconsin. I find also that the Avista here is so far perfectly free from blight and makes a much better growth than it does in my own orchard. As before stated, I planted the first three years about 120 Virginia crab trees for top-grafting experiments. Of these about twenty have entirely new tops. Some seventy have partial new tops, and some thirty are ready for their first grafting next spring, while the seventy are ready to be finished, for which I have the scions cut—and I prefer to cut them in the trial orchard as far as I can. The wood is well ripened, and while they may be no better I prefer them.

The trees to be replaced next spring are as follows: One Duchess, two Northwestern Greenings, two Longfields, six Newells, one Repka, three Dominions, two Eurekas, one Malinda, ten Early Richmond cherries and one Hawkeye plum, a total of twenty-nine trees. There is space left for some forty trees, so if any nurserymen have any new varieties they desire to have tested they can send two or three for that purpose the coming spring. The Windorf, a local seedling of Marathon county, I am testing both here

and at home. It is a promising tree and good fruit. At Mr. Barnes' request, I took five trees from his place and planted them while there to test the practicability of fall planting in that soil and climate. I find the new owner of the farm, Hon. A. L. Kreutzer, to be very much interested in the orchard, and he is quite anxious that we hold the summer meeting of 1900 at Wausau, and promises not only to our members but to the visitors that come from Marathon county free entertainment at the orchard.

LOCATING, LAYING OUT AND PLANTING A PLUM ORCHARD.

DEWAIN COOK, WINDOM.

In my opinion most any location will do for a plum orchard provided it is well drained and holds moisture reasonably well, but I consider an ideal location to be one that has a sunny exposure and is well sheltered by trees, and if convenient to the chicken house and pig pen so much the better.

In laying out a plum orchard the main thing, if not the only thing, to be considered is the convenience in caring for the trees during the life of the orchard, therefore they should be planted in rows, about twenty feet apart, and the trees planted ten or twelve feet apart in the row.

As to the planting of a plum orchard it is best to intermingle the varieties; beyond this, if the trees have been worked upon hardy native stocks they will require no more care in the planting than the box elder or the soft maple, and this paper would be at an end. But unfortunately the plum trees of commerce have been worked either on the Marianna plum, which is less hardy than the peach and is wholly unfit for northern planting, or else they are grafted upon French plum seedlings, which are only about as hardy as the peach and are not suitable for our needs. Hardy roots on any plum trees are the exception, and tender roots the rule; it is, then, well to plant the trees somewhat as follows:

After the land has been properly prepared by deep plowing, etc., and the land laid out by having deep dead furrows where the rows of trees are to be, then dig a hole about one foot square in the center of the dead furrow, where each tree is to stand, the hole being in the hard earth about one foot below the bottom of the dead furrow. The roots of the trees should be cut pretty close—four or five inches is enough, to leave less is just as well. Then set the roots in the bottom of the hole, fill in with earth and tramp solid. The dead furrow should be leveled next to the trees, and when finished the bottom of the roots should be from twenty-four to thirty inches below the surface of the ground.

Mr. Penning: I am in harmony with Mr. Cook's idea of giving hogs and chickens free access to the plum orchard—chickens especially all the time and hogs sometimes. That is a very important matter.

Mr. Jewett: I would like to ask Mr. Cook whether he advises filling up those holes entirely, or would he leave a little depression to catch the moisture?

Mr. Cook: I fill the hole up entirely. The object is to get the roots down so they will not freeze; and in two years the tree will have lots of roots, and it will be just as hardy as any. In our sec-

tion the great danger comes from setting the trees too shallow so they will root-kill.

Mr. Jewett: Would it make any difference with native trees?

Mr. Cook: You can put them in the ground any way the trees will stand up.

Mr. Penning: I just want to say a word about setting plum trees a certain depth. I want the union with the graft four or five inches below the ground. In three or four years time the new stock strikes root, and the tree will be on its own roots if set at that depth in planting.

Mr. Latham: Is there anything in the question of slope in setting out a plum orchard?

Mr. Cook: I prefer a sunny location. The most critical time with the plum is when the tree is in blossom. The trees will get into blossom before the last cold snap comes, and they will freeze. At my place it is a little too cold. I think they ought to be in a warm location, as nature intended.

Mr. Penning: I would like to ask whether trees do best on their own roots or on a grafted stock.

Mr. Cook: I don't know that it makes any difference. A few years ago I got some that were on their own roots, fall-budded and grafted stock, and in a few years I could not tell the difference; I would as soon have one as the other.

Mr. Harris: I do not know that it makes any difference in the quality of the plums whether grafted on native stock or not, but in raising trees for the average farmer or the villager it is best to have them on their own roots, because if anything happens to the tree a sprout comes up of the same variety. By Mr. Cook's method you virtually get them on their own roots. As far as possible the farmer and the villager should have them on their own roots. When a plum tree gets to be ten or twelve years old take the axe to it; the sprouts will give better plums than the original tree ever did.

Mr. Rogers: In planting so deep would it be best to fill up the holes the same as in planting apple trees?

Mr. Cook: I thought of that point when writing the paper, but I do not know that it makes much difference. The object in putting the tree down so deep is to kill those tender roots and give the tree a chance to set a new root.

Mr. Yahnke: Mr. Cook speaks of planting the trees in rows; would it not be better to plant the trees in groups where you set out only a half dozen? I have seen them planted in groups so they grew all to one head.

Mr. Richardson: Some thirteen or fourteen years ago I set four De Soto trees. I set them sixteen feet apart, right in a row. They have done first rate. And I have them scattered right among my apple trees. They do not need any grouping.

Mr. Cook: I thought of that point of having trees in groups. I think it is just as well to have them in groups, only it is not so convenient in cultivating. There is one thing I have found out in cultivating plum trees, if we go into the plum orchard with a plow it will reduce the crop very materially by cutting off the surface

roots. A man can mulch his trees if he has only a dozen or so. I think it is just as well, but I did not mention it in my paper, because that had reference only to growing plums for market, but if a farmer sets them in a circle twelve to thirteen feet apart, and keeps them mulched or hoed, that is better than any other way.

Mr. Jewett: If one were going to set out a plum orchard, would he gain any advantage by planting some strong roots where he wishes the plum trees to stand, and then grafting them, thus avoiding the necessity of transplanting? Would the tree itself not be a better tree from the fact of not having been moved from its original root. I do not know but some one may have made that experiment.

Mr. Elliott: There is one point I have not heard mentioned. This fall I was digging some seedling plums, and I noticed there were many of them that were inclined to rooting deep from the tap root, and this made a weak root. My theory would be to plant the plum seed where you want the trees to stand. The proper way would be to plant several seeds and save only that which grew the strongest. If you plant only one seed in a place, you will be liable to get a lot of weak roots.

Mr. Richardson: I was a farmer a good many years before I became a nurseryman. If a farmer had to go through all that performance he never would have any plums. There is not one farmer in a hundred or in five hundred would have any plums if he had to go through all that performance.

Mr. Jewett: I have an acre of ground prepared to plant in the spring. It has been subsoiled to a depth of about twenty-four inches, and the question arises in my mind whether I would be the gainer by setting the trees already grown or planting them the other way. I do not think the ground is wasted while we are waiting for the trees to grow. A good paying crop can be raised while the trees are growing to a fruiting age.

Mr. Rogers: I planted a row of plum trees about eight feet apart, intending to transplant them later. They have borne for several years in that condition. Where the ground is valuable I think it pays to plant close together, even if they have to be taken out later. The first two or three years, I think they bear just as well close together as twice the distance apart.

Mr. Harris: I have had no experience in the method Mr. Jewett speaks of. He would lose about one year in having them come so. If he sows the seed and then grafts the tree where the seed is sown, those trees will be set back two years, and Mr. Jewett will only lose one or two years time between seed planting and those ready to set.

The President: You mean by selecting the strongest growing he will get better trees?

Mr. Harris: Yes, he will get better trees; some varieties will bear the second year.

PRUNING SHADE AND ORNAMENTAL TREES FOR THE STREET AND LAWN.

FRED NUSSBAUMER, SUPERINTENDENT OF PARKS, ST. PAUL.

The art of trimming shade and ornamental trees for the street and lawn is a subject of such important nature that it should receive the most careful consideration, not only by your society but by every tree lover.

To begin with, I feel almost tempted to discuss the art of how not to trim trees. A lover of trees feels pained to see the mutilation and reckless amputation of noble trees planted along our avenues by some so-called professional tree-trimmer, who should be called by his proper name "tree butcher," who generally does not know enough of the nature of tree growth to be able to make a distinction in his work between a cottonwood and a hard maple, to which he applies his saw in an equally fiendlike manner, with the result of utter ruin to a once promising tree.

I know of sugar maples being trimmed by a so-called professional trimmer which were beautiful trees of their own natural habit of growth, but their habit had to be improved by trimming them into a globular form. These trees are now an object of pity, and their once healthy and thrifty branches and leaders are now dead and decaying stumps left to protest in silent agony against the harsh and unnatural treatment received at the hands of one who was paid for doing them a friendly act.

Trees seldom need severe trimming, and if they are not neglected of proper training when young a judicious thinning out and the pruning of some awkward leaders or branches will always be sufficient for a symmetrical growth. Therefore, the pruning knife early applied will in most all cases avoid the harsh wounds of the trimming saw ever after.

If we have to deal with trees that were neglected in training while young, and the trimming saw becomes an absolute necessity, it should be applied by one who knows the natural habit of the tree to be benefited, and the wounds made should immediately be treated with a heavy coat of paint or better still, with a coat of coal-tar and carbolic acid, so as to prevent fungi from eating its way into the tree.

My experience would show that pruning and thinning out is more often needed on trees growing in light soil than it is on trees growing on heavy soil. In shallow soil they have a tendency to grow into thick, bushy tops, mop-head fashion, which needs constant thinning out. In heavy soil they need less pruning but are more apt to throw out some unruly leaders or branches, which must be watched as to their development so as not to allow them to throw the tree out of balance.

A properly managed tree is at all times able to take care of itself in supporting its crown, but to do this it must be trained while young. Long lateral growth and wild shoots must be prevented by judicious pruning, thereby stimulating its backbone, the trunk, to become of sufficient strength and dimension to be able to carry the branches and leaves of its top. A top-heavy tree will become an early windfall. Shade trees on city streets require more attention in pruning than other trees planted in open spaces. The artificial surroundings will always check the natural condition for growth and development, and if not under the guiding hand of the cultivator it will often grow one sided and crippled. But under no condition should a tree be trimmed into any form or shape. A truly perfect, beautiful tree is not the one that shows man's handiwork; therefore, the art of tree trimming is a knowledge of true simplicity in nature. It is a knowledge of how to

assist nature in bringing out the vigorous beauty and supreme adornment of God's creation, the tree, given to man for enjoyment and pleasure.

In close relation with the art of tree trimming is an understanding of the requirements of the tree for proper sustenance. If considerable pruning is done to a tree a great deal of its sustaining properties are wasted, and if it stands in a soil whose texture is not able to supply the sufficient quantity, it must be supplied by top-dressing to its roots. If this is not done the tree will soon become of stunted growth.

Ornamental evergreens planted on lawns or open spaces often become thin or uneven in growth, generally caused by excessive and thrifty lateral branches. This should be cut back in the spring, and the tree will soon grow even and bushy by the more vigorous growth of the shorter branches and by the back growth of the ones that were trimmed.

HOW I RAISE EGG PLANTS.

WM. BOX, YANKTON, S. D.

(Paper read before S. D. State Horticultural Society, Jan. 18, 1900.)

Plant seed in the early part of March, in a hotbed that will average 75° to 80° temperature. When the plants reach the third or fourth leaf transplant in shallow boxes four and one-half to five inches deep, set four inches apart each way. Put in the hotbed again in the same temperature or a few degrees less, water well, and shade if the sun is bright, for a few days, airing in the middle of the day. When the plants get large leaves and are strong set them in a milder bed till the weather is warm, and it is time to set them out.

My plants are very large when set in field and do not wilt, no matter how hot the sun may be. When setting plants start in one corner of box with a trowel, and after the plant is removed divide them evenly clear to the bottom of the box, so as to get all of the dirt. I have found it best to thoroughly soak the soil and let them stand a few hours, when the earth will stick to the roots better, and they can be set with less trouble. I dig a hole with a spade so as to have plenty of room to fill in with loose moist soil, set the plants considerably deeper than they are in the boxes, tramp the earth firm but gently with one foot and then draw loose soil around the plants with the trowel. I do not hill them up, but leave the ground level.

I set plants three feet apart in the rows; rows four feet apart. My plants bear enormous crops; think I have raised as high as twenty-five fruits to a plant. Henderson's "Gardening for Profit" says nine is considered a good yield. The land must be rich to attain these results. When the seasons have been very dry, I have found sprinkling a large tablespoonful of salt around the roots to be of value, raking the ground with a steel rake afterwards. Do not let the salt get on the leaves or hearts of plants and cultivate the ground once a week if it is not too wet.

I think it better to cut the fruit than to pull it, so as to leave pieces of the stem on the plant. They are not fit to eat when ripe, but should be used when half or two-thirds grown. I find the "New York Improved" as good as any I have tried, although there may be other improved sorts fully as good. I think if people knew how to prepare and cook egg plant they would be more generally used.

My wife's receipt for preparing and cooking egg plant is as follows:

Slice thin, sprinkle each layer with salt, pile one above another, let stand from one to two hours, press out the juice, roll each layer in flour, then in beaten egg. Fry in hot butter until tender and golden brown and serve hot.

A THOUSAND DOLLAR PREMIUM FOR AN APPLE TREE.

J. M. UNDERWOOD, LAKE CITY.

In speaking upon this subject, there are two questions that naturally arise in my mind: what may we reasonably hope for as a result of this generous offer, and in what way can a person set about to produce the required fruit? Every variety of apple that grows has, at some time, been recognized as a seedling. Thousands upon thousands have been raised, and yet there is but a comparatively small number that have ever become popular varieties or that are grown in any great quantity. First among this list stands the Ben Davis, next the Baldwin, and after that the Northern Spy, and then you take your choice. To be popular and sell readily in market, it must be a red apple. To be most profitable, it must be a long keeper and stand handling well. This is why the Ben Davis stands pre-eminently at the head of the list. It is also a vigorous growing tree, repairs any damage done to it quickly, comes into bearing while young and is very prolific. It is not so good in quality as its rivals, but in every other particular it is the equal of them all, and it combines more good qualities than any other variety. For Minnesota, it lacks the one important thing, which is hardiness; but like the Walbridge, it grows so vigorously and recovers from an injury so quickly, that it is almost a success even this far north.

So far as we know, all of these varieties that are now under cultivation are chance seedlings, and there has been added another class known as hybrids, that were first introduced by Dr. P. A. Jewell, and are valuable in being hardy and prolific, but they lack size and quality, although they are a great improvement on the Siberian crab, from which the seed was taken that produced them. They are also very valuable in showing us what improvements can be made by crossing one variety with another. It is well understood that with animals we can control the conditions and breed for any desired purpose, milk, butter, beef, heavy draft or speed. The great Hambletonian 10 was a chance seedling, so to speak, but by the intelligent application of the laws of breeding he has sent forth a progeny that has astounded the world for speed. It used to be thought that one pound of butter a day was a good yield for a cow, but by intelligent breeding it is not an uncommon thing for two pounds to be made and even three and four from a single cow in a day. The fact of the greatest importance to us, however, is that this application of the intelligent principles of breeding may be applied to the vegetable as well as the animal kingdom.

It is not easy for us to credit or adopt any new theory of this kind, and I well remember that when our departed friend, Peter M. Gideon, came before this society and undertook to read a paper that presented the subject in rather a startling and seemingly extraordinary way, he was "sot down upon," as it were, and yet who will say now that he did not have advanced and intelligent ideas that it would have been well for us all to have acted upon. Mr. Gideon put into practice what he preached by planting trees with a view to crossing one variety with another, from the seed of which should come a hardy and desirable apple. He has produced many new seedlings, and some of them are very valuable, the principal one being the Wealthy. The importance of this variety may be estimated in one way by saying that, at Lake City, the Jewell Nursery Company, have, since 1882, grafted and set 727,959 Wealthys. The proceeds of these grafts have been sent out all over the country, and many other firms in every state where

apples are raised are grafting them extensively. The Wealthy only lacks two particulars; it is not quite hardy enough, but nearly so; its skin is so thin that it does not keep quite long enough. It has a close rival in the Okabena, which is more hardy, not quite so good in quality and of about the same season. This tree was grown from the seed that Mr. Gideon procured by cross-fertilization.

May we not take courage and have a reasonable hope that from some chance seedling or, what is more likely to be the case, from intelligent crossing of varieties, some one will yet raise an apple that will win the $1,000 prize?

How to do it? Let every one that has a seedling tree that seems to possess the necessary requirements, report it to the secretary of this society, and get from him the necessary information how to proceed. Next, let every one that has a chance, save seeds from hardy and long keeping varieties and plant them. As soon as scions can be cut from them, have grafts set into some healthy orchard tree, and in two or three years they will be likely to fruit and show whether they are valuable or not.

The most practical thing to do, however, is to set trees with a view to securing cross-fertilization of the blossoms. As a suggestion, plant a Wealthy and surround it with Duchess or some other hardy variety. The seed from the Wealthy apples should produce something hardier than the Wealthy, and as the Wealthy and Duchess are both very prolific the offspring should be an abundant bearer. Then to secure a late keeper plant this new seedling and surround it with Ben Davis or Malinda. The fruit of the seedling should produce seed that would grow a tree with the combined qualities we are seeking, viz: hardiness, productiveness and good quality, to which has been added the late keeping propensity.

Is not this an exceedingly interesting field for experiment? It seems particularly adapted to men and women past the meridian of life, those who have learned to be patient and having labored enough to entitle them to some leisure they can take time for following the pleasant paths of experimental horticulture and with this one thousand dollar prize in view.

It is equally well adapted for furnishing an interesting mark for boys and girls to aim at. Save seeds and try it. If you do not get the prize, you may still develop fruits that will prove a great acquisition to the list we now have. Our friends in the east and south stand as good a chance to win the prize as we do here. Let them join in the competition, and I feel certain that we shall live to see the prize awarded.

NATURE STUDY.

MRS. ANNA B. UNDERWOOD, LAKE CITY.

Much is being written and said about Nature Study. Many learned professors and thoughtful teachers are analyzing the present day course of study, that constitutes the education of the majority of school children, with a view to making a change that will give a practical turn to book knowledge.

The colleges and universities of the larger cities set the pace at which an education should be forced into a youth, and the towns, villages and rural schools follow along the course with varying degree of speed and thoroughness, until in despair of acquiring the quantity they are after the pupils

leave home to enter these institutions in the hope of acquiring as large a quantity of the regulation diet as their mental calibre will allow.

An educated gentleman, a physician, once said to the writer, that the great fault he had to find with the general education of children was that their brains were chiselled off to fit the education, instead of the capacity of the brain being taken into consideration and the education made to fit. All grades of mental capability, the average, the bright, the brighter, the brightest, are squeezed through the same knot-hole. In other words, except in rare cases, the individuality of students is lost in the squeezing, crowding, pushing, chiselling they are forced to undergo before the coveted sheepskins are placed in their hands; and possible, first-class, up-to-date farmers, mechanics and business men are turned loose upon society as second or third rate M. D.s, D. D.s, L. L. D.s, who are in no wise prepared for the conflict with life. They have acquired erroneous ideas as to the value of their advanced education. They find the professions so overcrowded, that, with few exceptions, it is only the sharpest, the most unscrupulous that succeed in gaining patronage and earning more than a bare living; and the result is the lowering of the standard of morality in order to keep up with the pace set by the favored few. Or perhaps, deterred by the gloomy prospect, they drop down to the level of the ordinary work-a-day people, feeling disappointed that their education has not proven a good wage earner for them. Looking at an education in that way belittles the knowledge acquired, for a good education should be a great help to the farmer, business man or mechanic.

Why this reckless, unthinking rush for book education? The child brain instinctively seeks for knowledge; it must have it to round out its experience as a living being. It will have knowledge of some kind. Is the child to be its own guide as to its needs? Is it to rush headlong into the race for a certain goal, wholly without thoughtful consideration as to its fitness for the struggle? All the others are going, and he wants to go!

Let the thoughts that follow be applied to rural life. Humanitarians acknowledge that farm life is susceptible of being broadened, that it has within its resources the possibilities of a well nigh perfect earthly existence. Poets call upon nature, in its varied forms as manifested in the country, to give them inspiration to picture scenes of peace, content and happiness, while if misery, sorrow and trouble are to be their theme the cities furnish the material.

Country folk themselves intuitively sense this condition of their environment and would be content if only certain features pertaining to their daily life could be different. The chief drawback to their happiness is that it is difficult to hold their children to farm life. As long as children remain factors of the home, parents and children are united by a common interest; but if they make homes in the cities, straightway a barrier arises between them. The parents feel lost in the rustling, rushing, busy cities, they are like aliens in a foreign land; the children find the home farm life too slow, too vapid, too sleepy, too small, for more than a short time there at Thanksgiving or Christmas.

Oftimes the children that go to the cities are not successful. They are among the vast throng who struggle from hand to mouth to keep body and soul together, and yet they would not give up the uncertainty of city life for the peace, content and assured comfort of farm life. Is not this true?

A friend living in New York city laughingly tells of her efforts to help a poor woman with a large family of children. They seldom had enough to eat, little to wear and were frequently without shelter, and on account of their extreme poverty the privileges of school were not available. A place was found for them about fifty miles in the country on the farm of a friend who gave them the use of a neat little cottage free, and who also was willing to pay for all the work the mother and older children could do about the house and farm. The children were to have the privileges of the nearby school. Everthing worked well, apparently, for a time, until one fine morning no "friendly smoke" appeared from the chimney of the little cottage, and no one came to the farm house to assist in the work. Inspection of the little home showed that the mother and her children had literally flown from the scene. A week later, my friend met the woman on one of the busy streets of the city. To the questions propounded came the reply—"Oh, sure! and it was too lonesome out there to stay! There was nothing going on! No parades, nobody going by on the streets, no neighbors droppin' in to talk over miseries with, no fights and murders, no fires to run to," etc.

Well, right there was the key to the situation! Unable to read and write, with no knowledge of anything, except what was gathered from the city pavements, "misery and trouble" around them at all hours of the day and night, they missed the horrible excitement of discussing the misfortunes and crimes of their fellow beings. Although only so many infinitesimal atoms, whose loss from the complement of city vitality would be no more noticed than the annihilation of so many motes in a sunbeam, yet they felt the attraction of friendly intercourse with kindred atoms and so gravitated back to their natural element. Taken without due preparation to the country, it proved an utter blank to them. Barring the creature comforts of life, it was like placing them on a desert island in mid-ocean.

It is not necessary to consider the conditions of city life except to profit by the lessons that may be learned therefrom.

Returning to the consideration of the great drawback to the content and happiness of the farmer and his wife in that they cannot hold their sons and daughters to farm life, it will be advisable to reflect upon the condition of their surroundings and then search out the reason for their aversion to it. It is easily found and defined as a lack of interest in, due to the ignorance of, the details of daily life. Their city cousins come to visit them, and they are full of animation and narrate many stories of the wonderful things they have seen at school, at the museum, in the parks, etc., and the poor little country bumpkins are speechless in blank wonderment and envy. They have nothing to relate. Everything is so simple and commonplace around them; nothing but grass, trees, bushes, creeks, meadows, orchards, nut trees, fields of wheat, rye, oats, barley, fragrant buckwheat, clover, towering stalks of corn, hills, immense rocks, a river, perhaps, or maybe a lake full of fish, a windmill, a spring, horses, cows, pigs, sheep, hens, chickens, dogs, kittens, lots of pets, bees, insects, birds in variety, animals of the forest and prairie, beautiful wild flowers all around. No! Nothing to speak of! Poor little mortals! A thousand things around them, but all so common that they are not worthy of mention or even of notice, and for the simple reason that they know nothing of them!

Right here is where Nature Study comes to the rescue. These restless, active minds must be supplied with the wherewithal to satisfy the craving

that leads them to seek other scenes for its gratification. Country children above all others are the ones to whom the mysteries of nature should be unfolded.

Here is an illustration: "A summer shower." How common! Let us ask a few questions about it. Where did the water come from? How did it get there? What holds the clouds in the air? What makes them move along? Why don't all the clouds send down rain? What has heat to do with rain? Why is there frozen rain in the summer? What are the uses of rain? What effect does rain have on a field of corn? etc., etc. Questions might be asked until a book could be filled with questions alone, and the answer to each would require words enough to fill another book, and then there would be thousands of books just about a "summer shower."

Again. Here is a curious insect. What is it's name? Where was it found? Upon what does it live? Is it an enemy to plant life? At what season is it the most harmful? How to get rid of it? And again a countless number of questions may be asked and many books published upon this little insect and its characteristics. And it is a lamentable truth that there are comparatively few people in Minnesota who are aware of the fact that the state considers the study of insect life of such vital importance to the welfare of its people that it employs a man to devote his whole time and attention to watching the maneuvers and study ways and means to circumvent the injurious action of harmful insects. How interesting the study would be to children!

Here is yet another instance. A brilliant hued hard maple leaf! There are thousands of them just like it under the trees. How many children, or grown people, would deem it worth a thought? Yet it has its work to do all through the growing season. It has toiled harder than the busy tenants of the farm, for it has been laboring day and night without a moment's rest to accomplish its mission. Now, as it falls to the ground is its life work complete? Listen to its own answer:

Little brown leaf, whence came thou?
From the tree top overhead.

Little brown leaf, what wouldst thou?
Be buried—for I am dead.

Little brown leaf, thy life work?
To help my brother, man.

Little brown leaf, thy motive?
I am part of nature's plan.

Little brown leaf, thy morrow?
To be part of the earth once more.

Little brown leaf, what after?
God knows, as He knew before.

The writer of this beautiful poem appreciated the work of the little brown leaf and also the power that brought it into existence.

Enough of examples. Nature Study exercises the senses and the thinking principle to the point of comprehending the thousand little mysteries that are constantly near us, making plain even those beyond the power of vision. If the leisure moments of the mind are occupied in studying the various forms of animate and inanimate objects, it will not harbor thoughts of a hurtful character. A boy who is thoroughly interested in birds, studying

into the habits and characteristics of each, making his collection of nests or eggs by which to identify them, exchanging information with others, writing his experiences, etc., will find little time to form the bad habits of smoking, chewing, drinking, etc. He will not be tempted to leave home in search of a "good time." The girl who finds food for thought in learning the names and habits of the various forms of plant life, seeing fresh beauty every day and something new to learn, will not have her head filled with vain fancies and be able only to retail gossip. No! This boy and girl will have thoughts that will place them on a level with the true culture of the world. Taught to observe, to enjoy the companionship of the unlimited number of objects of interest surrounding them, they will find too much of interest, too much to love about the old home, to get far away. Nothing can be done for those who have already strayed away, but the work can be taken up with the little ones just starting to school. It will have to be introduced and carried on through the co-operation of the school teacher. The center from which the methods must come for carrying on the movement is the agricultural school. The impetus for starting the movement, arousing public sentiment, may largely be made the life work of women. Naturally understanding the needs of children quickly, they can set the ball in motion and do much toward bringing about a reform.

Is Nature Study practical? Has it been tried? Yes! The Cornell University College of Agriculture took it up and issued their first pamphlet in December, 1896, as an experiment. Here is what the authorities say of it—"The demand for aid in Nature Study teaching is so pressing that we are now expecting to issue a regular quarterly bulletin devoted to the subject." Let me enumerate the titles of the leaflets:

How a Squash Plant Gets Out of the Seed.
How a Candle Burns.
Four Apple Twigs.
A Children's Garden.
Some Tent-makers.
What is Nature Study?
Hints on Making Collections of Insects.
The Leaves and Acorns of our Common Oaks.
The Life History of the Toad.
The Birds and I.
Life in an Aquarium.
How the Trees Look in Winter.

Nature Study "simply trains the eye and the mind to see and to comprehend the common things of life; and the result is not directly the acquirement of science, but the establishing of a living sympathy with everything that is."

It is teaching the child to observe, to furnish it with food for thought, to understand the relationship between the little things of life, and its own heaven born intellect. The child is taught to realize that there is something more in life than the simple amassing of wealth; that it is but one of the many links between the past and the future, and, comprehending this, it will knowingly reach out a helping hand to guide others along the pathway of right knowledge.

The President: I was very much interested in this paper that has just been read, for it seemed to me to furnish the key to the whole situation. We have all our lives been taught to think that, first, we must get up an interest in the subject, and when that interest is established then we may go and learn about that subject. There are a great many things that are possible, but that is one of the impossibilities, to get up the interest without knowledge. We must first learn something about the subject, and just as soon as we have learned a little the appetite is whetted for more. We want to know a little more. There is a door open there; it is ajar, we can peep through there and know a little; then we want the door thrown open wide so we can get a clear vision of what lies beyond. That lecture by Prof. MacMillan just gave us a glimpse of what is beyond. Everybody that listened to that lecture wanted to know a little more about that great subject. Mrs. Underwood was just right when she said that the boys and girls that are brought up in the country see nature all around them, thousands of delightful things, if they could only make a beginning; but it is all going to waste, making no impression upon them because they have not learned the first thing about them. A school teacher who wanted to do some practical nature work took a fish into the school room and put it in his drawer. At the close of the afternoon when all the boys wanted to go home and the girls were sympathetic with that idea—and those of you who have taught school know that the last fifteen minutes are the worst of the whole day—he waited until the last fifteen minutes, and then he presented the subject in a dull, dreary and perfunctory way. The pupils were thinking of going home, whispering to each other. But some of them asked a few questions. One boy who was way back in the rear of the room was noting down some things that he had learned on a little scratch book that he had. He was paying attention and learning, and when the teacher was ready to put the fish away he had learned some things he did not know before and began to be interested. So he raised his hand. "What is it, John?" asked the teacher. "What is inside the bones?" The teacher looked at the clock; he didn't know how to answer the question. He said, "It is four o'clock, we will think that over and take it up later because it is now time to dismiss." About thirty years after that the same teacher went to Washington, and he saw there the members of the supreme court. There was one man there that he thought he had seen before somewhere. He cudgeled his brain, thought it over, where had he seen that man? Somewhere, but he could not tell where, till at last when he heard the man speak he said it is that boy who wanted to know what was inside the bones. That was the very boy; he had got to be a judge of the supreme court by trying to find out what was inside the bones. He learned some things, and he wanted to learn more.

When I travel anywhere in the country I get my mind drawn in one direction, I think of something in connection with the country I am going through, I keep watching the results of the operation, the work of streams, and when I see the great boulders, the

high peaks of the Rockies changing into soil and dust and gravel, when I see the great heaps of refuse at their base, I see the work of water. Then I see the great, craggy ledges where those rivers start and flow down their course to the sea grow smaller and smaller and smaller by the action of the waves, as they grind up the rocks on the bed of the river by corrosion as they are rolled over and over, till by and by, down at the jetties, every one of those tremendous rocks that weigh thousands of tons at the start, every one is ground to powder, so the whole can be sifted through a floor sieve. I take a great deal more interest in the subject the more I learn about it. It is like getting money; if you get a little you want more. We can make our children pleased with home, satisfied with their surroundings and laying the foundation of greatness for the future. We can build up great characters, great minds by first getting them to learn something and then add a little. We always say we pass from the known to the unknown. That is the progress of learning, going from the known to the unknown. I would change that a little. It is taking a little out of the great unknown and adding it to the little that is known. That is education, continuously thinking out. You cannot reach in and pick it out; you cannot reach in and take it out as you do apples from a basket; but think it out and put it with the things that you do know. Then you are on the high road to success. This applies to our apple growing, our flower growing, everything we do, we have got to think our road to success. (Applause.)

AN APPEAL FOR A NATIONAL PARK IN MINNESOTA.

To the People of the State of Minnesota:

From east to west the forests of the United States have fallen under the axe, wielded intemperately for purposes of immediate and inconsiderate gain. In unnumbered districts the lumberman and the fire which always follows in his destroying footsteps have left an arid and unproductive wilderness behind.

The wants of the people in the way of building material have not been the better but the worse supplied by this indiscriminate destruction of trees. Forestry culture would have fed the lumber markets of today from the stumpage fields of thirty years ago. The next generation should reap its timber where the lumber industry is active today. Other countries have learned this lesson. The United States is learning it late. From their forest reservations European nations derive a revenue which scientific tree culture has made perpetual.

Minnesota has a chance to profit by the experience of the past. In the northern part of this state lies the last great tract of native pine forests in the northwest. Eight hundred thousand acres of land and lake lie within the Indian reservation of Leech Lake, Cass Lake and Winnibigoshish. Its pine has been untouched, saving under the disastrous and infamous enforcement of the "dead and down timber" act. In response to a memorial presented by the last legislature of this state, Congress voted to withdraw this land and its timber from public sale pending the submission of a proposal to create in this area a great national park.

Under the direct inspiration of Minnesota lumbermen, an attempt is being made in the present Congress to rescind that resolution and permit the

sacrifice of these forests to go on for the benefit and satisfaction of private greed. A bill has been introduced in the Senate to this effect.

A prompt protest from the people will check this action. Their positive demand will secure the salvation, for present and future generations, of this valuable area.

No public project has ever concerned the state of Minnesota which has so cogent arguments in its support. The title to these lands and lakes still lies practically in the United States government. No vested rights or established interests will be prejudiced by its permanent dedication to the people.

If the forest remains national property, the pine will not be removed from public use. It is proposed to make these forests an object lesson in practical scientific forestry. By the building of roads and the cutting of timber, under suitable regulations, the danger from fire will be minimized. Under proper restrictions, the mature pine may be regularly sold and cut. Forestry experts estimate that the forests of this area will yield a continuing revenue of five per cent upon the investment which the government may make in the payment of Indian claims upon the land.

It is not proposed to remove the Indians from the reservations. They remain but a handful, for whom room and occupation as guides, campers, lumbermen and park police can be readily found.

The area is a paradise for sportsmen. It is unsurpassed in its native beauty. It is remarkable in its health-giving qualities. It combines a moderate elevation with a pure, dry air, a sandy, readily drained soil, an abundance of coniferous timber and an ample lake surface and forest area. It should be a Mecca for sufferers in the early stages of tuberculosis, for the victims of nervous exhaustion, for all who are in search of health and rest and recreation.

Twenty millions of people live within a day or two's ride of this region. Their tourists will afford a revenue to the state, beside which the value of the land and its timber is a minor consideration. They will foster in permanent prosperity the towns and villages lying in or to be built within this tract, in place of the ephemeral existence of the town-sites which the lumber industry promotes today and leaves to a slow and premature death tomorrow.

The permanent reservation of these forests is of moment to the entire valley of the Mississippi, since in their soil lies the great natural sponge which absorbs and regulates the outflow of the water-sources of the great river, lessens the liability to spring floods and filters the rainfall.

The undersigned, representative of the several organizations subscribed, appeal, therefore, to the people of the state of Minnesota to speak promptly and emphatically, through their representatives and senators in Congress assembled, in favor of the dedication of the Minnesota National Park.

Action, to be effective, must be prompt. The public voice should be heard with a very certain sound.

SIGNED BY—

The Minnesota National Park and Forest Reserve Association, Cyrus Northrop, LL. D President.
The American Public Health Association, Peter H. Bryce, M. A. M. D., President.
The Minnesota State Medical Society, W. A. Hall, M. D., Chairman.
The Minnesota State Homeœpathic Institute, William Leonard, M. D., President.
The Minnesota State Federation of Women's Clubs, Mrs. L. T. Williams, President.
The Minnesota Academy of Medicine, C. Eugene Riggs, M. D., President.
The Minnesota State Board of Health, Franklin Staples, M. D., President.
The Hennepin County (Minn.) Medical Society, H. B. Sweetser, M. D., President.

HOW MINNESOTA SEEDLINGS CAME THROUGH THE WINTER OF 1898-9.

J. S. HARRIS, LA CRESCENT.

When it is considered how very few of the old standard varieties of apples in cultivation south and east of us will withstand the severity of many of our winters without fatal injury, it is encouraging to know that we have a considerable number of seedlings of our own production that give promise of possessing superior hardiness and came through the last very cold winter without any apparent injury, and great numbers that came through and are in better condition than the hardiest of the older varieties, which but a few years since were termed "ironclads." Familiar to us among these were the St. Lawrence, Fameuse, Talman Sweet, Haas, Dominie, Walbridge, Plumb Cider and others, but the winter left them more or less crippled, and most of them have been killed outright in previous cold winters. The Wealthy generally came through the winter in better condition than any of the above list. Although it was the first Minnesota seedling placed prominently before the public and recommended for general planting by our society, it has proved hardier and better than any of the older American varieties, and in this respect nearly equaling the Duchess of Oldenburg and several others of the best of the Russians. (These notes cover only my own observations and are confined chiefly to southeastern Minnesota.)

The Peerless stood through the last winter without injury. It is a vigorous, strong rooted tree, that is inclined to continue growth until late in the season and hold the foliage late into winter, especially with young trees, and has frequently, in some localities, shown a discoloration of the ends of the young wood; but has rarely failed to grow from the terminal buds. The variety seems to be improving in this respect and ripening the season's growth better than when first introduced.

The Okabena came through the winter in even better condition than the Duchess, which may probably be attributed to its being a more vigorous grower and a stronger rooted tree.

The Daisy, which is of the same origin as the Okabena, came through all right.

Not any Russian within the range of my observations endured the winter as well as the Nelson, at Spring Valley and other places where it has been grown. Not a terminal bud was discolored, and not a leaf has blighted.

The Ohligee seedlings Nos. 2, 6, 8, 10 and 14, which have been propagated by S. D. Richardson, at Winnebago City, and are on trial on my own place, have come through as well as any of the Russians.

The Malinda, while not a Minnesota seedling, was developed and extensively propagated in this state. It shows considerable discoloration in some localities and does not appear to be as hardy as the varieties above named, but is worthy of further trial.

The Eberhard, Catharine, Holt, Waif, Lord L, Brett No. 1, and dozens of others not yet named, came through the winter in better condition than almost any of the old eastern varieties, and with selections that will yet be made from varieties originated by Messrs. Gideon, Dartt, Brand and others, the outlook for growing apples of the very best quality and most beautiful appearance in our North Star state is very cheering. If our people will save and plant seeds of the hardiest and best apples raised and ripened in our own

climate, the time is not very far distant when the best apple known to civilized man will be knocking at the door of our treasury for the $1,000 premium we are offering. I have seen numbers of seedlings, that have not yet fruited, that were not in the least injured by the severity of the winter.

NOMENCLTURE AND CATALOGUE, ANNUAL REPORT OF 1899.

J. S. HARRIS, CHAIRMAN, LA CRESCENT.

The committee on nomenclature and catalogue spent considerable time at the late state fair in looking over the exhibits that were set up in competition for premiums and found a considerable number of varieties that were not correctly named, usually crossing out the name under which they were set up and writing the true name, where known to us, underneath or upon a separate card.

In collections we found Anisim labeled Zuzoff; Duchess of Oldenburg named Borovinka; Charlamoff, Anisette; Autumn Streak, and several other misnomers; Hibernal as Leiby; Recumbent, Juicy Burr, Silken Leaf, etc.; one unknown variety as Christmas; an unknown as White Pigeon, and as Giant Swaar; one as Plumb's Cider, one as Roxbury Russett, one as Tallman Sweet; one Wealthy as Walbridge; one Patten's Greening as Northwestern Greening; one Scott's Winter as Elgin Beauty and a dozen or more of the Russian Striped Anis under a great variety of names. Several collections were not corrected, principally those competing for sweepstakes.

In entries of single plates we found one Duchess as Charlamoff, one Wealthy as Haas, one Wealthy as Walbridge, one Wealthy as Ostrekoff, one Wealthy as Peerless, two Antonovka as Ostrekoff, one unknown as Kaump, one unknown as Lubsk Queen, one Virginia crab as Tonka, one Ben Davis as Fameuse, one unknown as Christmas, one unknown as Gilbert, one Anisim as Christmas.

There is a marked decrease in the varieties wrongly named over those of previous years, and we found more erroneous names in the exhibits by professionals than in those by amateurs. It seems probable that some of the exhibitors were not familiar with or not disposed to accept the action of the inter-state committee on Russian nomenclature, that met at La Crosse in 1898, by which all varieties of specific families should only be known and exhibited under one name. We think that the classification made by that committee should be binding on both judges and exhibitors. It is bewildering, if not unjust, to have so many names for one variety, or varieties so near identical that no expert can distinguish them, and it gives shrewd and unscrupulous exhibitors of unlimited collections a great advantage over those who are not well up in names. There were a number of new names in the premium list for single plates that are unknown to pomologists, and we were unable to determine whether they were filled with the variety called for or not, although there were entries made for each name, and in some instances two or more filled with different varieties. It is our opinion that varieties should not be placed upon the premium lists for competition until their name has been accepted and adopted by our own or some other state horticultural society, or by the American Pomological Society, and a description of them has been published in our annual report or in the catalogue of the American Pomological Society. There were a number of

plates labeled Peter that we were unable to distinguish from the Wealthy, and we believe they were that variety. If the Peter is a different variety from the Wealthy it should be carefully and accurately described that the committee may be able to distinguish between them.

There were numerous exhibits of Patten's Greening and the fruit invariably of good quality, large size and fine appearance, and the variety is reported as being very hardy and productive, nearly free from blight and worthy of more extensive planting. Therefore we recommend that it be raised in plate classes in the premium list and that six premiums be offered on it corresponding in amount to those offered for Duchess, Hibernal and Wealthy.

We also recommend that the premium list for collections of Siberians and hybrids be changed to read "For best collection of Siberians and hybrids, correctly named, not to exceed ten varieties."

It is our opinion that all Minnesota seedlings that promise to be valuable for cultivation in this state should be catalogued and described as soon as practicable after being brought to notice by exhibition or otherwise, and that suitable names should be given them as soon as their values are established.

S. D. Richardson, of Winnebago City, has been allowed the name "Superb," for the seedling he is propagating under the name of Ohligee, No. 14, also propagated by J. S. Harris under the name of Dr. Hume. The description is: Size, five to six; form, round ovate oblique; color when ripe, clear light yellow with often light blush cheek; stem, short, deeply set in a slightly angular, narrow, greenish cavity; calyx, open; basin, medium ribbed; flesh, yellow, fine grained, juicy, mellow; flavor, rich, sub-acid, very good; season, early winter; origin, Winnebago City, Minn.

It is our opinion that the committee on nomenclature should consist of three members (two being a quorum), and that it should be required to meet and examine, and correct the names of fruits shown in competition at the state fair and exhibitions of this society before awards of premiums are made, and that a suitable card or label showing the work of the committee should be provided for their use.

Prof. Hansen: I believe that in showing fruit at the fair there should be two departments, one for standard varieties—and, for instance, as Mr. Harris suggested, crabs should be limited to ten varieties and other fruits correspondingly, and then a seedling department, entirely apart from the others. Then the one that has the most varieties culls out some varieties that would be otherwise unknown. I do not like the present way of mixing up the seedling and standard sorts; it makes too much work.

Prof. Green: That premium for the largest collection of crabs is a drag net that draws on our tables a lot of trash. The good varieties we get anyway, but we get also a great lot of very inferior crabs, and if we want to make the collection big the result is that we get a great lot of crabs that are of no earthly use. I know that premiums could be awarded better if a change were made. Prof. Hansen's point about keeping the seedlings separate is all right, but

I do not believe in offering a premium to amount to anything for a collection of crabs. If we want to have anything to go by, let us offer a premium for the three best, but we do not want to offer a premium for a crab collection.

Mr. Philips, (Wis.): In judging fruit last year I found it exactly as Prof. Green states, and we have reduced our list to the ten best varieties of crabs. We found what Prof. Hansen says to be the case last year in regard to the largest collection of seedlings. I do not believe in giving the premium to the largest collection, but to the best collection. Last year we had some collections that contained about half as many as others, but they were superior, while in the large collections there were very few that were desirable to propagate. I think Prof. Green's idea is to reduce it to three, then if a man has a dozen seedlings let him cut those down to three, and in that way we will get a more valuable collection if not as large.

Prof. Hansen: I believe that matter could be arranged by having a separate premium offered.

Mr. Latham: I judge by what Prof. Hansen said, that he thinks the seedlings and standard varieties were mixed up at the state fair. No exhibitor is permitted to mix his collections in this way. In his collection of named varieties he can not put in a seedling of which he owns the original tree, but he may put in some one else's seedling, if it is named. According to the rules of the Minnesota state fair, an exhibitor must show his seedlings in an exhibit strictly by themselves. They are always shown in a different part of the hall, separate from the collections of standard named kinds.

REPORT OF COMMITTEE ON AWARD OF $1,000 FOR SEEDLING APPLE.

PROF. S. B. GREEN, CHAIRMAN.

The premium of $1,000, which was offered one year ago by the Minnesota State Horticultural Society, has attracted very much attention and been generally noticed in the more important papers and periodicals of this country. It has shown that our state and society are enterprising, and if it does nothing more than show this as the normal condition of our people it will certainly be a great benefit in this way. It has resulted in starting correspondence with some sixty different parties, most of whom are owners of or interested in some seedling apple which they think worthy of entry. As yet, however, there has been but one formal entry, and that is from Ohio. (There have been several more since this was written.—Secretary.)

Among the inquiries that have been made is as to what we would regard as a seedling in the competition for this premium. It seems to me that in this competition we should regard as a seedling any variety which is not generally grown, and that we would not be very particular about this point

in case we were to find the variety we seek. In other words, we care more about getting a good, hardy, long-keeping apple than we do about any quibbling over fine distinctions. As chairman of this committee, I have begun the practice of making a photograph of every variety received that seems to be of special value. In this photograph I show one specimen cut in halves, and the other, the exterior. These photographs are then filed away with the application and correspondence in regard to them. In case scions are received, the scions receive a number and are stored for grafting. One specimen is wrapped in paper, put in a box, and stored in a good cellar to test its keeping qualities. Those who enter for this prize should be very careful to pack their fruit in good condition; otherwise no fair test can be made of its keeping qualities. It is hardly safe to put fruit in a pasteboard box wrapped in paper and sent through the mails, as it is almost sure to be bruised to some extent. Apples for entry for this premium should be shipped by express, or, if sent by mail, should be packed in strong boxes, very much larger than the fruit, in which the fruit should be put, after having been carefully wrapped in tissue paper, with plenty of wrinkled paper or excelsior as packing.

SIBERIAN STOCK FOR THE APPLE.

C. G. PATTEN, CHARLES CITY, IOWA.

(Written for "The Fruitman.")

Since the root-killing experience of last winter, that extended over so large an area of our country, much interest has been created in reference to hardy stocks for our fruit trees, and especially for the apple, and as several have applied to me for information in regard to the adaptability of the Siberian seedlings, particularly of the old yellow and red Siberians and Cherry crab, I thought best to give my experience through The Fruitman, as it would reach many who are interested in this subject and to whom I have not time to write personally.

Our older horticulturists will remember other years when root-killing of apple trees has been severe here in the west, the last severe one prior to last winter being in the winter of 1882-3. The loss of nursery trees was so serious in that winter, that in the fall of '83, I saved seeds of the varieties of Siberians named above, so that in the following year I grew more than seventy thousand seedlings, and in the two following years I root-grafted a large part of them. I cannot now recall all of the varieties of the apple that were experimented with, but distinctly remember the following: Tetofsky, Duchess, Fameuse, Haas, Plumb's Cider, Utter, Fall Orange, Green Spitzenburg, Wealthy, Walbridge, Saxton and Perry Russett, Hyslop, Briar's Sweet, and, I believe, Transcendent, also. Certainly a sufficient number to make a fair test. I had heard it reported at that time that the experiment had been tried in Vermont, and that it was not regarded a success; but seeing the apple roots killed under the Transcendent and other crabs, while the crab roots that were thrown out from the scion were perfectly bright and sound, it appeared to me that at least some of our western sorts might be a success on these crab roots.

They united well, and nearly all kinds grew very finely the first and second years. At three years they were generally fine trees, but I noticd some varieties were lighter bodied than they ought to be. At the end

of three years the experiment on the whole was considered flattering, but the roots of some trees, and now noticeably in some varieties, did not appear as large as they should be for the size of the trees. The fourth year developed a marked deficiency in the roots of some sorts. As I now remember, Tetofsky and Duchess had poor roots at three year old, while Wealthy and Walbridge held on well till five or six years. Perry Russett, also, and Saxton were among the best and the longest to keep control over the Siberian root. As the years went on it was apparent that there was a want of adaptation between stocks and scions, and it must be written up as, on the whole, a signal failure. At first the root was stunted, and in turn the tree was not sufficiently nourished and became dwarfed. The crab root prematurely ripened, and that led to a second flow of sap in the fall which put the trees in a tender condition for the winter and made them more tender than upon apple roots.

This experiment was begun with much confidence, as the Siberian seedlings were very fine, and the work was carried on with reasonable care. To repeat the experiment with seeds of those varieties would be a waste of time and money. Had I had the seeds of Whitney No. 20, Briar's Sweet, Minnesota and Sweet Russet, or other comparatively non-blighting sorts with as much of the apple blood in them, I have no doubt that my experiment would have been attended with reasonable success, and that the trees so grown would have been much superior to those on purely apple seedlings. I would not dare risk very much on the seedlings of the Virginia crab, or of any other sort that shows so much of the Siberian, both in tree and fruit. The idea of making a difference, or trying to, between Pyrus baccata, and any other form of Siberian crab, appears to me to be visionary. The Siberians are so mixed and blended in this country that it is impossible to separate them. It is well, no doubt, to try the Virginia seed but useless to try the smaller Siberians, even to develop better varieties of crab apples.

FACTS ABOUT THE WEATHER OF 1899 IN MINNESOTA OF INTEREST TO THE HORTICULTURIST.

T. S. OUTRAM, WEATHER OBSERVER, MINNEAPOLIS.

A discussion of the subject of weather almost necessarily compels a comparison of weather records, for we regard a season as unusual only when some particular factor differs from what we have been taught by experience to expect at the place and time in question.

Many believe that the climate is gradually changing, but it is a fact that it varies from the general type only within quite narrow limits, and it is also certain that what has happened will happen in the future. For instance, the lowest temperature recorded in Minneapolis in any January since 1891 was —26°, and the highest minimum temperature in the same time was —2°, from which it is reasonable to suppose that in very few years will the lowest January temperature be below —26°, and we can expect very few Januarys in which the temperature will not fall to —2°. An endeavor has frequently been made to build up a system that might be called long range forecasting, or seasonal forecasting, by arranging the more pronounced departures from the normal into groups or periods, and if it is found that a few of these periods recur with something resembling a periodicity, it is concluded at once that a general law has been established; but unfortunately

just here is where the weather may be truly said to be fickle, for if the comparisons are continued it will be found that there is no rule governing this recurrence of hot and cold, dry and wet seasons that can be relied on for practical purposes.

Now, in order that we may learn more about the cold weather in the early part of 1899, I have selected some figures from the records of the St. Paul and Minneapolis offices of the Weather Bureau taken since 1875.

That the comparison may be made without the use of too many figures, I have taken the average hourly temperature of the three consecutive coldest days in the different months, and I shall mention only those that were unusually cold. These figures show the average of all the hours in the three consecutive days, and for the present the lowest temperatures will not be considered. January and February of 1875 each had one of these three-day periods, during which the average was —14°. In 1883, January had one of these periods with an average of —20°. In 1886 the record for January was —16°, and for February —15°. January, 1887, had —19°. In the cold winter of 1888, January had —22°, followed by —16° in February. February, 1893, had —15°. February, 1895, had —15°. January, 1897, had —17°, and January, 1899, had —11°, followed by —21° in February.

These figures show that the winters of 1888 and 1899 were not only the coldest, but that the cold was long continued. In other winters there were cold snaps, but the cold did not continue so long and with such severity.

Minimum temperatures of —25° are not at all unusual in our Minnesota winters, so I will confine my remarks now to discussing only the winters of 1888 and 1899. In January of 1888 from the 8th to the 26th, the minimum temperature ranged from —4° to —41°, the latter temperature occurring on the 21st, being the lowest temperature recorded in this part of the state at Weather Bureau offices. This long period of intense cold was followed by a cold February, with cold periods from the 6th to the 11th, with minimums ranging from —7° to —33°, and again from the 14th to the 16th, with —18° as the coldest.

In 1899 there were cold snaps early in January and again late in the month, the latter period extending from the 26th to the end of the month, and into February till the 13th, with the mercury below zero some time in the 24 hours on every day during the period. The coldest part of the snap was from January 27th to the end of the month, and from February 7th to the 12th, and the lowest temperatures were —26° on January 30th, —29° on February 8th, —33° on February 9th and —31° on February 11th. There was below-zero weather again part of the first ten days of March, and —7° as late as March 20th. It will be noticed that the temperatures in 1888 were lower than in 1899.

It is not claimed that these figures represent the lowest temperature reached in the most exposed places, for the instruments were placed on the tops of heated city buildings; they are very valuable for purposes of comparison, for the exposure has always been very nearly the same.

I think it safe to say that on the ground under these instruments the temperature would be at least six degrees lower, and in many places in the open country the difference might be fully ten degrees, while on bright and nearly calm nights the difference between the temperatures of these instruments and the temperature at the surface of clean snow might be even considerably more. Bousingault, a noted French physicist, made

some experiments along this line which might be interesting at this point, and also showing how great a protection to the soil is a covering of unpacked snow. In his experiments he used three thermometers, one of which he placed in the soil, the second on the surface of freshly fallen snow four inches deep, and the third at an elevation of forty feet. From a number of simultaneous readings the following, taken under the most favorable conditions, will bring out the points clearly.

In one experiment the instrument on the ground read 26°, the one on the snow, 10°, and the one in the air above, 28°; in another experiment, No. 1 read 28°, No. 2, 17° and No. 3, 22°; and still another in which No. 1 read 32°, No. 2, 30° and No. 3, 40°. It is distinctly stated that in these experiments the snow was freshly fallen and lay on the ground as a light, fleecy covering. But as the snow becomes more compact with settling, and converted into a covering of ice by continued thawing and freezing, this protective character is lost, and the ground under such a covering will freeze to a great depth, and there is danger also of the plants under the ice becoming smothered by having their air supply cut off.

The texture of the soil, as regards compactness has much to do with the depth to which it will freeze, as does also its covering of sod, straw, etc., the bare, compact soil freezing deeper than the looser and covered soil.

I have noticed that some of our northern horticulturists think that the amount of moisture in the soil at the time of its going into winter quarters has considerable to do with the vitality of the plant, and, as experience is a good teacher, there may be a good deal in this theory. We know that we have had extremely cold winters, and it is very likely that in the future our fruit growers will have to guard against the same extremes, and as no one is able to foretell the coming of the very cold seasons, prudence would suggest to him to use all the precautions that are known every year. He cannot order the rains to irrigate his soil at the right time to the right degree, but he can fill his soil with decaying vegetable matter, or humus, which is an excellent retainer of moisture, besides which, it keeps the soil friable, and, so, less in danger of deep freezing. He cannot demand that the snow shall fall at the right time, and compel it to remain in the best condition, but he can cover his soil with a good mulch for winter protection.

I can offer no suggestions from experience of my own, but unless these have already been tried and found wanting, I should think them worthy of a trial on a small scale, at least.

Mr. Dartt: I have read that in a basement where cold settles and there is nothing to drive it out, it is a great deal colder than it is four feet above the ground. My theory is that the reason a top-graft stands better than a root-graft is on that account, and I thought your remarks proved that it was a good deal colder at the surface than a distance above the surface.

Mr. Outram: I think that is so.

REPORT ON SEEDLINGS, 1899.

J. S. HARRIS, LA CRESCENT.

During the past season, in the search for and the examination of seedling apple trees, your committee has visited places and orchards at Washburn, Excelsior, Waconia, Spring Valley, Austin, Owatonna, Oakland, Winnebago City, Delavan, Pleasant Mounds, Winona and Homer. As it was not a favorable season for fruit we could not secure samples of many of the varieties seen in order to test their quality, and have generally only made notes on the condition of the trees.

In the orchard of J. R. Cummins, at Washburn, we found four varieties of apples that did not show any apparent injury from the last winter and looked to be as sound and healthy as the Duchess and Wealthy and were carrying considerably more fruit than these and other standard varieties. One seedling crab or hybrid was noticed bearing a medium sized red striped fruit of good quality that keeps well through September, and may be valuable if it continues to be proof against blight.

At Excelsior we visited the trees of the Lyman's Prolific Crab, originated by H. M. Lyman. No better tree than the original, now thirty-two years old, can be found anywhere. It shows no weakness, is a strong grower and very productive. Mr. Lyman informs us that the fruit ships well and takes well in the market. The only objection that can be raised against it is that the fruit is rather large for a crab. Young trees in the nursery as well as the original came through last winter in perfect condition.

At Peter M. Gideon's place the orchard was producing but little fruit, but the trees were generally looking well, and especially so when it is considered that for two or three years previously they had been frequently stripped of their foliage by the forest tree tent caterpillar. His orchard is comprised chiefly of Duchess of Oldenburg and seedlings of his own origination, most prominent among them being the Wealthy, Peter, Lou and the Florence crab. A considerable number of these seedlings are just coming into bearing, and several of them produce fruit that bears a striking resemblance to the Wealthy, and the trees are of the same appearance and habit of growth, but we thought some of them appeared to be more hardy and vigorous and probably less subject to blight, and we were assured that a few of them were longer keepers. The surroundings of the place are such as to invite a tendency to blight. Later we sampled some of the specimens of fruit, the flavor and quality of which did not differ materially from a well grown Wealthy, but it is very likely that some of them will prove to be longer keepers and perhaps better in tree, and as the first fruiting is not always a true index of the future value they are likely to improve under propagation.

We believe that this orchard should be looked after by our society until all of the trees have come into bearing, in order that the fruits of the untiring perseverance and labor of more than forty years spent by Mr. Gideon in earnest efforts to originate fruits adapted to our soil and climate, may not be lost to the world. Thirty-six varieties of these fine seedlings were on exhibition at the late state fair, and a few at this meeting (Dec. 1899).

The orchard of the late Andrew Peterson, at Waconia, is being well cared for by his son, and although not bearing heavily was carrying considerable fruit. The orchard is comprised largely of Russian varieties of

apples and the newer, or seedling varieties that have been originated in the northwest. Here the Russians have been given the most extensive and thorough trial of all points in the state, and as they are all carefully labeled, they should be looked after and noted in order to more quickly determine which of the varieties will prove most desirable for general cultivation. Among newer varieties Patten's Greening is promising to be one of the very best. It stood through last winter without any injury and is very exempt from blight.

At Austin F. W. Kimball is coming to the front as an experimental orchardist. His place is not one of the most favorable locations, the soil being underlaid with gravel too near the surface. He is testing a great number of varieties, chiefly top-worked upon Hibernal and Virginia stocks. He met with considerable loss last winter by root-killing. We dug out a number of the injured trees and found that the roots below the graft were entirely dead, while the Hibernals and Virginias down to the point of grafting were not injured. Where no roots had formed above the original grafted root, growth did not start, and the trees were soon dried up; but those that had rooted above the point of grafting opened their buds and showed life in proportion to the amount of roots formed. It appeared a good object lesson in favor of shelter on the south and west sides. The root-killing was confined to two rows on the south side, and the protection on the south and south end of the west was too distant and not ample. The little snow falling was blown into rows beyond and held there by a row of raspberry bushes about four feet from the next row, and gooseberry and other plants through other parts of the orchard. The loss of snow and evaporation of moisture from soil by sun and winds undoubtedly led to the injury, as a slight protection near the surface of the ground seemed to have saved the remainder of the orchard. The injury to tops of trees was very slight, and there was no blight in the orchard this season, which Mr. Kimball attributes largely to having taken out all trees of Transcendent crab.

Spring Valley.—The Nelson seedling, at this place, is one of the most promising trees I have yet come across. Not even the terminal buds were in the least discolored by the cold of last winter. It is from seed of an unknown variety and was planted in 1872. The tree is said to have never shown any signs of blight and does not at the present time show that it has ever received injury from any cause. It a vigorous grower. The head of the tree starts at three feet above the ground, and the trunk measures three feet in circumference at two feet above the ground. It is a very heavy bearer, on alternate years, of fruit as large and fine appearing and of better quality than the Duchess. Season, two weeks later. Here we saw trees of the North Star and University (Patten's 102), and both had come through the winter without any discoloration of wood or other injury.

Homer.—Here considerable attention is paid to the growing of cherries, and every village garden contains from a dozen to hundreds of trees. The variety doing the best and most generally planted is called English Morello. It appears to be hardier than the Early Richmond. While none of the trees seemed to be injured by the last winter, the fruit buds were undoubtedly injured, as the crop of fruit this season was very light. Last year the crop was unusually large and fine. The variety was introduced here from Connecticut by S. A. Alling, and the trees planted are on their own roots, being neither grafted nor budded but raised from root sprouts, or

suckers. Mr. Alling has quite a large apple orchard containing a considerable number of apparent seedling varieties, they having grown up from the roots of trees that killed to the ground in 1884-5. Many of these are fine, healthy looking trees, and one he has named Hamburg and another Long John appear to be worthy of looking after. These two have grown from stumps of the Fameuse apple. The trees were not injured last winter, and produced a fair crop this season. Quality of fruit very good and of fair appearance, and it is said to keep later than the Wealthy.

Oakland.—The seedling orchard of T. Lightly, at Oakland, continues to endure the climate well but was not fruiting as heavily as last year. Of the 100 seedlings he procured from Mr. Gideon a number of years since about sixty are now living, and among these there are more promising varieties for very trying locations than in any like number of seedlings from Mr. Gideon or any other source. In quality none of them are better than the Wealthy, but apparently some of them will keep later.

Delaven.—C. W. Thayer has one seedling apple tree, that is now about twenty years old, that came through last winter without any injury whatever, and it does not show appearance of having ever been injured by sunscald or blight. The tree is a good, rather upright, symmetrical grower and said to be an annual bearer and reasonably productive; fruit medium size and good quality for eating and cooking. The fruit of last year kept up to the middle of May last. A plate of the fruit is on exhibition at the meeting.

At Winnebago City there are some fine seedling apple trees known as the "Ohligee seedlings," that cover the season of fruit from the Duchess until midwinter. These trees are about twenty-five years old, thrifty and apparently healthy, and have so far stood the climate as well as the Duchess. For most purposes the fruit is better in quality. No. 14, which has been named "Superb," is the latest keeper and probably the most valuable of the lot. S. D. Richardson is propagating a number of them and finds them to be among his best nursery trees.

On Nov. 9th, at Pleasant Mounds, we visited the orchards of Mr. J. S. Parks. Here we found the most extensive collection of varieties of apples of bearing age we have seen in the state. He has exhibited as many as 233 varieties at one time at the Blue Earth County Fair and nearly all of them were seedlings or but little known varieties of western origin. A considerable number of them were from the late Mr. Springer, of Wisconsin, but a larger portion are of his own originating. He says that among them there are about forty varieties that will keep well all winter in an ordinary house cellar, and a considerable number of the trees have the appearance of being very hardy. As was generally the case his fruit crop this season was very light, and from the few specimens left we were not able to determine their merits. Here we found the Wolf River doing as well or even better than the Duchess. He has the two oldest trees of that variety now in existence, they having been grown from the first scion ever cut from the original tree, that is now dead. From him we learned that he furnished the seed from which the Wolf River originated. He says that it is not a seedling of the Alexander, but that the seed was taken from a very large green colored apple with a blush cheek, of which he did not know the name. The seed was planted by Mr. Springer in 1852. It is doing well and is quite popular in this part of the state. Mr. Parks has had many obstacles to overcome and uphill work to do on the wild prairie, but he has demonstrated that apples can be raised in very unfavorable locations in spite of hurri-

canes, blizzards, snow-drifts, rabbits and mice, all of which have opposed him in his work, and that some seedlings will endure under adverse conditions.

Owatonna Tree Station was visited on August 14th, and three days were spent in examining trees and fruit. We found the station under as good cultivation and management as usual, and many of the little trees loaded to their fullest capacity with fruit, but the fruit of the greater number of them is too small, too early in ripening and not good enough in quality to make them popular for commercial orchards. As yet Mr. Dartt, the superintendent, has not succeeded in originating the large, handsome, long keeping, good quality apple we are so anxiously looking for, but he seems to be making progress in that direction, and his tests of varieties already originated will prove very helpful to transplanters. Mr. Dartt can grow trees and make them bear, but to get the greatest good from his work he should have some assistance during the fruiting season to make careful and continuous examinations in order to sort out the most promising and have them described and named and put on trial at other places. In the examinations we noted forty-four varieties of seedlings that we thought were worthy of further trial, and there may be some others. About eighteen of these may be classed as small to medium sized apples, possessing considerable merit, either in quality of fruit or apparent hardiness of tree. The remainder partake more or less of the nature and appearance of being crab hybrids, but some of them are likely to prove valuable to take the place of the Transcendent and Hyslop, which are proving to be great blighters. The best apple seedlings noted were Seed F. 2, medium size, yellow and red striped, sub-acid; Seed L. A., good tree; Seed A. N., medium size, yellow, mild acid, no blight; Seed I. S., small, early, good sub-acid, good tree; Seed Z., promising; Seed A. K., medium, good tree, productive. One Russian seedling, No. 4, is a good tree and produces an early, very good fruit. A number were noted for further observations, hoping that Mr. Dartt would furnish us samples of the fruit later. Some injury occurred in the station from root-killing last winter. It is here suggested that most excellent results might be obtained by cross-pollenizing some of these hardy, productive, beautiful fruited seedlings with some of the large, long keeping varieties of Missouri and Arkansas apples, like the Mammoth Black Twig, Arkansas Black, and Rome Beauty.

Root Killing of Trees.—When we are injured by falling it is not the fall that hurts, but it is the sudden stop. So our apples trees are not often killed by freezing, but very often by thawing out too suddenly. Small twigs and branches are often killed by being frozen dry, as clothes freeze dry on the line, and sometimes, I think, by being bent by the wind when hard frozen. Had the extreme cold of last winter been accompanied by furious winds top-killing might have been more general. As it was, little harm was done except by root-killing, which only occurred where mulching had been neglected and the little snow we had had been blown off.

Some have suggested hardy roots, but my word for it there is no apple or crab root hardy enough to be proof against root-killing without some kind of root protection. If we are prepared for the thawing out, we can safely say "let it freeze." E. H. S. DARTT.

Owatonna, Minn.

MY METHOD OF REARING QUEENS.

MRS. H. G. ACKLIN, ST. PAUL.

The subject that has been assigned me is somewhat of a misnomer, as it is not my method altogether that I use, but it has been appropriated largely from Doolittle's book on Scientific Queen Rearing. By using this method one gets fine large queens, with the added advantages of knowing just when they will hatch and having a cell that fits in the protectors. We have reared queens in the following manner for several years:

As early in spring as practicable (one has to be governed somewhat by the weather) take the queen away from a strong colony. After two or

A Frame of Fifteen Queen Cells.

three days there will be queen cells started from which to get royal jelly. We use dipping sticks and clean, yellow beeswax, and put twelve cups on the first stick.

Before commencing to prepare the cups, go to the queenless colony and shake the bees from all the combs and remove all queen cells, leaving out one comb and the open space ready for the frame with cells. Leave this at one side, say two combs from the outside. This space will be full of bees waiting to get to work long before you are ready to put the frame in. Put a drop or two of royal jelly into each cup, being quite sure that you remove

the larvae. Now go to the colony where the queen is you expect to breed from, and take a frame with larvae from twenty-four to thirty-six hours old. Transfer the larvae into the cups, and your frame is ready for the bees.

After about four days more go to your queen-rearing colony and shake all the bees from the combs and again cut off all the natural queen cells, putting back the two combs as quickly as possible next the cups. Leave out one comb on the opposite side of the colony and proceed as before, as this cutting will give you royal jelly for another set of cups. Do not disturb this colony until the last cups have been in two days. Close watch must be kept on it, however, in order to be sure that no natural queen cells hatch. The artificial queen cells can be placed in nuclei when they are nine or ten days old.

After the brood is all sealed the trouble is over with that colony, as we keep up the strength with frames of sealed brood which have been put in an upper story to be sealed, purposely for them.

Later in the season I put fifteen and sometimes eighteen cups on one stick. Here is a kodak picture of our little daughter holding a frame with a string of fifteen mature queen cells. In the background is a portion of our queen rearing apiary. Every one of those cells hatched the next day after the picture was taken. I prepare a string of cups every two days and sometimes two strings. The same colonies are kept buildings cells, one string on each side, until they commence to show a lack of interest, when they are given laying queens, and others selected.

Great care should be taken in selecting queens to breed from. A queen with all the good qualities combined is none too good. We keep a high priced imported queen in our yard all the time, and breed from her and select tested queens. We have had several imported queens, but never a swarm from any of them. Last summer a two-story ten frame hive would hardly hold the bees, but no swarm.

Great care should also be taken in the matter of drones. As soon as possible in spring put some drone comb in the center of your choicest colonies; and if you have some which are not so choice, take the drone comb away if they happen to have any.

I will gladly answer any questions that I can on this subject.

LOCATING SHRUBS FOR EFFECT.

FRANK H. NUTTER, LANDSCAPE ARCHITECT, MINNEAPOLIS.

Many, and indeed most, of those who enter with enthusiasm on the improvement of their home grounds devote both time and money to the securing of trees for this purpose, and frequently too many of them; and then, deeming their task complete, "retire upon their laurels." When, however, the trees begin to shoot upward, and, shedding their lower branches, open up the grounds again to the searching winds, it is seen that without the co-operation of their more humble allies, the shrubs and dwarf trees, their mission is but poorly accomplished.

Much more effective, even as a shelter-belt, will a group of trees become if its borders be extended somewhat by dwarf willows, dogwoods, thorns, etc., from the neighboring swamps and thickets.

From the standpoint of scenic effect also these minor additions are of value, for, however attractive the interior of an open grove may be, it be-

comes more so when it is screened and partially concealed by well-disposed groups of shrubs.

To the owner of grounds of limited extent, the shrubs come with particular value. Very few trees perhaps can be accommodated on the narrow lawn, and often they will have to be relegated to the sidewalk row; one or two smaller and select varieties of tree, as the Wier's maple, cut-leaf birch, or weeping mountain ash, or some dwarf evergreen may be placed upon the lawn, but the principal dependence must be placed upon the shrubs, and gallantly will they come to the aid of those who put their trust in them.

How, then, shall they be arranged to give the best effect? The father of American landscape gardening, in his desire to combat the ideas of geometrical planting prevailing in his time, suggested that better results might be obtained if the planter would take the necessary number of potatoes, and, throwing them at random in the air, set his trees wherever the tubers might be found resting on the lawn. Sometimes we find shrubs dotted all over the grounds in such a way as to indicate that the owner had literally followed some such advice; but as we contemplate the spottedness that results and the lack of open lawn space, we feel that the spirit of the great artist, if present, would add to his former suggestion a clause to the effect that, when applied to shrubberies, the garden rake should first be called into use to draw the potatoes into more intimate relationship with each other and to afford those broad spaces of sunlight so essential to a perfect picture.

It is evident then that under ordinary circumstances our shrubberies should be arranged around the boundaries of our lawns, but other considerations may also influence the special location of them. Many necessary details of domestic economy, especially in the country, are not always desirable features in the landscape and, whether far or near, properly arranged plantations may entirely screen them, or, with the addition of vines, so drape the obnoxious object as to change it into a thing of beauty.

The individual taste of the owner will also point to specific effects desirable in these plantings. If he desires the brightest reminders of opening spring, many early-blooming species will serve him, and on through the calendar of flowers he will find those varieties which will continue the feast of colors until autumn frosts replace the blasted blossoms with the richer scarlets and yellows of the dying leaves.

Even in winter their beauty will not flee, for the many-tinted fruits and seeds of the cranberry bush, the bittersweet, the wild rose and the winter berry, the crimson wands of dogwood, the golden bark of the willow and the evergeen of the spruce and pine stand out the more vividly for their drapery of sparkling frost or fleecy snow.

In obtaining all or any portion of this, some rules, however, may be followed to advantage.

While an occasional fine or rare specimen may stand somewhat apart on the lawn, it is well to keep most of the plantings more compact, though of course with irregular outline of bed.

In these plantings the different species or kindred species should be massed, rather than scattered promiscuously throughout the borders; the latter arrangement would give a spotted effect throughout the season, but

massed as suggested, first one section of the shrubberies and then another will burst into bloom as the season rolls by.

Vividly colored shrubs will appeal forcibly to some planters, and while, if used cautiously, the effects may be pleasant, they must be used with caution, and the main reliance placed upon the old standard varieties which have proved reliable in our climate. The same may be said as to many of the novelties so much lauded in print at so much per line.

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Many years ago when we set trees from the Jewell Nursery, and others, and, of course, did not know what we wanted—any better than we do now—we did not have very good luck in making them grow, and if they grew the first hard winter weeded out the major portion of them, such as Perry Russet, Golden Russet, Grimes' Golden, St. Lawrence, Greenings, etc. We have now and then an old tree of the old stock left to remind us of the good old times gone by.

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Near where the trees or plants are heeled in, or the place where they are to be planted, dig a hole about two feet in diameter and one foot deep. Fill it nearly full of water. Into this put mellow earth that is partly composed of clay, and stir it until it is a mass of thin sticky mud. As soon as the roots are trimmed ready for planting, dip them into it bodily. If there is any delay about planting, and the mud dries so that it is not sticky, puddle them again. When the mellow soil comes in contact with these muddy roots it will stick to them closely. Those who have never tried this plan can have no knowledge of the good that follows. I puddle almost every plant that I set, and find that it always pays. Cabbage and sweet potato plants will start into new growth almost without wilting, no matter what the weather may be at the time.

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country, the value of which will be much better understood as the years go on.

The matter of more hardy roots for all our fruit trees is a most important subject to the planter, still one which has been neglected in our search for hardy stocks until Prof. Hanson got out after them. Now they must come to us, for the professor will go to the North Pole in his search, if such a trip is necessary to accomplish any undertaking placed in his hands. I trust all growers of nursery stock will aid him in this much needed work.

Luverne, March 6. A. K. BUSH.

A VALUABLE DEWBERRY.—I have a dewberry that I believe will do well in Minnesota with proper winter protection. It has stood twenty degrees below freezing here without protection, but I do not know how much more it would stand. It, however, could be very easily protected from cold, as it lays close to the ground.

I see that Prof. Green, of St. Anthony Park, has been experimenting with the dewberry with poor success, and I want him to try my Texas dewberry. I also want to test the shipping qualities and am contemplating shipping you a twenty-four box crate of the fruit about April 1st, with a few plants for Prof. S. B. Green.

We are having a very late spring. The dewberries are just beginning to bloom, and it may be a few days after April 1st before I shall be able to send the fruit.

I believe I have a good berry and a good shipper, and I want as many of my horticultural friends to test it as can take the time and trouble to do so.

Lamarque, Texas, March 6, 1900. A. STEWART.

FRUIT AT SLEEPY EYE.—We had a snowfall of about five inches March 5th and 7th. This is the first sleighing for this winter. This winter was hard on winter wheat, and in many places winter rye is damaged to some extent. I had several foreign plum trees left over from last winter. All are dead now except Early Red and a Russian. I received several Early Red from Prof. Budd, five years ago. They have borne a few plums the last two years. I tried to acclimate them, and I have grafted them for the last four years. I took scions every time from my last grafting, and grafted them again on hardy plum seedlings. I examined the last grafting a few days ago and found them in good condition. I have a number of plum trees grafted on sand cherry roots several years ago; they had a fair crop of healthy plums last year. The rest of my plums were poor in quality, and many rotted on the trees.

I have several apple trees that were partly damaged last winter, growing during last summer. They are dead now. Two years ago I top-grafted a few on Hibernal and Virginia crab. I put on scions of Patten's Greening, Peerless and a Repka Malenka, and all made a good growth. They look fresh and healthy. I received a few Patten's Greening five years ago. They have borne a few apples the last few years. The Patten is hardy and a reliable tree to plant; also an early bearer.

I was in New Ulm a short time ago. I found out that the Horticultural Club there is dead. I am pleased to learn that so many farmers became members of the State Horticultural Society in and around Sleepy Eye.

I cut out about an acre in my timber last winter, where the timber was light, and shall replant this spring. I will plant cottonwood and black walnut. I cut cottonwood this winter that were planted in 1870; the trees averaged over one cord of wood.

Sleepy Eye, March 7, 1900. MARTIN PENNING.

Secretary's Corner.

HAVE YOU VISITED THE OFFICE AND LIBRARY LATELY?—A list of those of our membership who have visited the office and library of the society during the past month would be a long one—too long for your reading or my writing. Do not fail to call when in the city and see the society home.

SURPLUS PAPERS FOR DISTRIBUTION.—There is something of an accumulation of agricultural and horticultural papers in this office, which will be sent to any applicants without expense, except express charges. First come, first served. If you do not receive any in response, it is because earlier applicants have exhausted the supply.

LIST OF THOSE SENDING NEW MEMBERS IN MARCH:

J. E. Dodds, 1.	G. A. Tracy, 2.
L. R. Moyer, 1.	W. S. Higbie, 1.
C. E. Older, 2.	H. W. Hinds, 1.
Jas. Ogilvie, 1.	Paul P. Klevann, 1.
M. Olson, 1.	Thos. Redpath, 1.
J. S. Harris, 1.	A. K. Bush, Farmers' Institute, 34.

AN APPEAL FOR THE MINNESOTA NATIONAL PARK.—The attention of our members is called especially to an appeal in the interest of the proposed National Park, which it is hoped to locate in northern Minnesota. It is a measure which commends itself to all who are interested in forest development and protection. A method by which you may help along this movement is suggested in this article, which will be found on another page in this number of the Horticulturist.

ANOTHER WISCONSIN TRIAL ORCHARD.—At the late annual meeting of the Wisconsin State Horticultural Society, it was decided to establish another trial orchard, at some point still farther north than Wausau, where the present one is located. This determination must necessarily interest Minnesota horticulturists very much, as any results obtained are of equal value in either state. President Johnson, Secy. Herbst, Prof. Goff, Mr. L. G. Kellogg and Henry Worrant have charge of this enterprise.

HISTORY OF WISCONSIN HORTICULTURE.—B. S. Hoxie and Prof. E. S. Goff are a committee appointed by the Wisconsin society to prepare a volume under the above title. An outline of the work given in the "Wisconsin Horticulturist" indicates the comprehensiveness of the plan, which, if carried out, will cover every feature of value in the pomology of the state. In pursuance of the purpose a large number of circular letters have been addressed to those informed on the subject. This is a worthy project, and the result is awaited with interest by the brethren "over the line."

A NATIONAL PARK IN MINNESOTA.—The attention of our readers is called particularly to an article published in this number entitled, "An Appeal for a National Park in Minnesota," issued jointly by a number of popular state associations interested in the subject. To give this appeal force requires that

the reader should communicate with his representative in congress. The opponents of the measure are actively at work, and its friends must give it attention if this timber is ever to be saved for this exceedingly desirable purpose. Write today.

About the Milwaukee Apple.—Who of our society has ever given the Milwaukee apple a trial, and what has been the result? When at the Wisconsin State Fair last fall, we saw the fruit and were much impressed with its appearance and good quality. It is said to be a seedling of the Duchess, and it certainly looks as much like its reputed parent as child ever resembled its mother. Same shape, same striping, same expression. But it is said to be a true winter apple. Perhaps Father Harris knows all about it, and why we Minnesota people are not spending much thought on it.

Clarence Wedge.

Information Wanted about the Gideon Seedlings.—Mr. Elliot has secured from the late Mr. Gideon's books the addresses of several hundred persons to whom he sent apple seedlings for planting at different times. There is so much promise of valuable results from this distribution, that a communication is soon to be sent out from this office to those parties to learn the outcome. Any reader of the Minnesota Horticulturist who can give information about any of the seedling apple trees now growing in their vicinity that originally came from the late Peter M. Gideon, of Excelsior, Minn., will confer a great favor by sending the secretary, and editor of this journal, a postal card with the name and address of the parties now owning such trees and other information in regard to them.

Are You Interested in Trees?—Owing to the great demand for the publication "Forestry in Minnesota," (a 312-page treatise, by Prof. S. B. Green), the Minnesota State Forestry Association has decided to have the remaining copies bound in cloth. Until the supply is exhausted it can be had for 25 cents, (cost of binding and postage); to non-residents, 40 cents. We will also distribute a limited number of Jack Pine Seedlings, 4 to 6 in. (one of our hardiest native evergreens), in quantities as desired, at 1 cent each, postpaid.

Every one interested in tree-growth should belong to this association. Permanent membership fee is $1, including the above mentioned publication; or, upon receipt of 40 cents extra, either 50 Jack Pine seedlings, 100 Box Elder or 50 Laurel Leaf or Russian Golden Willow cuttings will be mailed postpaid. Correspondence should be directed to

Geo. W. Strand, Secy.,

Taylor Falls, Minn.

A card from Mr. O. F. Brand announces the death of E. B. Jordan, at North Ontario, Calif., on March 10, 1900. Mr. Jordan will be well remembered by all the older members of the society, as very prominent in our work from 1868 to 1886, when he removed from the state. For some years past he has been engaged in preaching the gospel. We hope to secure soon a suitable biography of our honored fellow worker.

the larvae. Now go to the colony where the queen is you expect to breed from, and take a frame with larvae from twenty-four to thirty-six hours old. Transfer the larvae into the cups, and your frame is ready for the bees.

After about four days more go to your queen-rearing colony and shake all the bees from the combs and again cut off all the natural queen cells, putting back the two combs as quickly as possible next the cups. Leave out one comb on the opposite side of the colony and proceed as before, as this cutting will give you royal jelly for another set of cups. Do not disturb this colony until the last cups have been in two days. Close watch must be kept on it, however, in order to be sure that no natural queen cells hatch. The artificial queen cells can be placed in nuclei when they are nine or ten days old.

After the brood is all sealed the trouble is over with that colony, as we keep up the strength with frames of sealed brood which have been put in an upper story to be sealed, purposely for them.

Later in the season I put fifteen and sometimes eighteen cups on one stick. Here is a kodak picture of our little daughter holding a frame with a string of fifteen mature queen cells. In the background is a portion of our queen rearing apiary. Every one of those cells hatched the next day after the picture was taken. I prepare a string of cups every two days and sometimes two strings. The same colonies are kept buildings cells, one string on each side, until they commence to show a lack of interest, when they are given laying queens, and others selected.

Great care should be taken in selecting queens to breed from. A queen with all the good qualities combined is none too good. We keep a high priced imported queen in our yard all the time, and breed from her and select tested queens. We have had several imported queens, but never a swarm from any of them. Last summer a two-story ten frame hive would hardly hold the bees, but no swarm.

Great care should also be taken in the matter of drones. As soon as possible in spring put some drone comb in the center of your choicest colonies; and if you have some which are not so choice, take the drone comb away if they happen to have any.

I will gladly answer any questions that I can on this subject.

LOCATING SHRUBS FOR EFFECT.

FRANK H. NUTTER, LANDSCAPE ARCHITECT, MINNEAPOLIS.

Many, and indeed most, of those who enter with enthusiasm on the improvement of their home grounds devote both time and money to the securing of trees for this purpose, and frequently too many of them; and then, deeming their task complete, "retire upon their laurels." When, however, the trees begin to shoot upward, and, shedding their lower branches, open up the grounds again to the searching winds, it is seen that without the co-operation of their more humble allies, the shrubs and dwarf trees, their mission is but poorly accomplished.

Much more effective, even as a shelter-belt, will a group of trees become if its borders be extended somewhat by dwarf willows, dogwoods, thorns, etc., from the neighboring swamps and thickets.

From the standpoint of scenic effect also these minor additions are of value, for, however attractive the interior of an open grove may be, it be-

comes more so when it is screened and partially concealed by well-disposed groups of shrubs.

To the owner of grounds of limited extent, the shrubs come with particular value. Very few trees perhaps can be accommodated on the narrow lawn, and often they will have to be relegated to the sidewalk row; one or two smaller and select varieties of tree, as the Wier's maple, cut-leaf birch, or weeping mountain ash, or some dwarf evergreen may be placed upon the lawn, but the principal dependence must be placed upon the shrubs, and gallantly will they come to the aid of those who put their trust in them.

How, then, shall they be arranged to give the best effect? The father of American landscape gardening, in his desire to combat the ideas of geometrical planting prevailing in his time, suggested that better results might be obtained if the planter would take the necessary number of potatoes, and, throwing them at random in the air, set his trees wherever the tubers might be found resting on the lawn. Sometimes we find shrubs dotted all over the grounds in such a way as to indicate that the owner had literally followed some such advice; but as we contemplate the spottedness that results and the lack of open lawn space, we feel that the spirit of the great artist, if present, would add to his former suggestion a clause to the effect that, when applied to shrubberies, the garden rake should first be called into use to draw the potatoes into more intimate relationship with each other and to afford those broad spaces of sunlight so essential to a perfect picture.

It is evident then that under ordinary circumstances our shrubberies should be arranged around the boundaries of our lawns, but other considerations may also influence the special location of them. Many necessary details of domestic economy, especially in the country, are not always desirable features in the landscape and, whether far or near, properly arranged plantations may entirely screen them, or, with the addition of vines, so drape the obnoxious object as to change it into a thing of beauty.

The individual taste of the owner will also point to specific effects desirable in these plantings. If he desires the brightest reminders of opening spring, many early-blooming species will serve him, and on through the calendar of flowers he will find those varieties which will continue the feast of colors until autumn frosts replace the blasted blossoms with the richer scarlets and yellows of the dying leaves.

Even in winter their beauty will not flee, for the many-tinted fruits and seeds of the cranberry bush, the bittersweet, the wild rose and the winter berry, the crimson wands of dogwood, the golden bark of the willow and the evergeen of the spruce and pine stand out the more vividly for their drapery of sparkling frost or fleecy snow.

In obtaining all or any portion of this, some rules, however, may be followed to advantage.

While an occasional fine or rare specimen may stand somewhat apart on the lawn, it is well to keep most of the plantings more compact, though of course with irregular outline of bed.

In these plantings the different species or kindred species should be massed, rather than scattered promiscuously throughout the borders; the latter arrangement would give a spotted effect throughout the season, but

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I was much pleased to meet Prof. Hanson, horticulturist of the South Dakota School of Agriculture, who has earned a national reputation for the progressive work he is doing in the best interests of the dry portion of this northwestern

country, the value of which will be much better understood as the years go on.

The matter of more hardy roots for all our fruit trees is a most important subject to the planter, still one which has been neglected in our search for hardy stocks until Prof. Hanson got out after them. Now they must come to us, for the professor will go to the North Pole in his search, if such a trip is necessary to accomplish any undertaking placed in his hands. I trust all growers of nursery stock will aid him in this much needed work.

Luverne, March 6. A. K. BUSH.

A VALUABLE DEWBERRY.—I have a dewberry that I believe will do well in Minnesota with proper winter protection. It has stood twenty degrees below freezing here without protection, but I do not know how much more it would stand. It, however, could be very easily protected from cold, as it lays close to the ground.

I see that Prof. Green, of St. Anthony Park, has been experimenting with the dewberry with poor success, and I want him to try my Texas dewberry. I also want to test the shipping qualities and am contemplating shipping you a twenty-four box crate of the fruit about April 1st, with a few plants for Prof. S. B. Green.

We are having a very late spring. The dewberries are just beginning to bloom, and it may be a few days after April 1st before I shall be able to send the fruit.

I believe I have a good berry and a good shipper, and I want as many of my horticultural friends to test it as can take the time and trouble to do so.

Lamarque, Texas, March 6, 1900. A. STEWART.

FRUIT AT SLEEPY EYE.—We had a snowfall of about five inches March 5th and 7th. This is the first sleighing for this winter. This winter was hard on winter wheat, and in many places winter rye is damaged to some extent. I had several foreign plum trees left over from last winter. All are dead now except Early Red and a Russian. I received several Early Red from Prof. Budd, five years ago. They have borne a few plums the last two years. I tried to acclimate them, and I have grafted them for the last four years. I took scions every time from my last grafting, and grafted them again on hardy plum seedlings. I examined the last grafting a few days ago and found them in good condition. I have a number of plum trees grafted on sand cherry roots several years ago; they had a fair crop of healthy plums last year. The rest of my plums were poor in quality, and many rotted on the trees.

I have several apple trees that were partly damaged last winter, growing during last summer. They are dead now. Two years ago I top-grafted a few on Hibernal and Virginia crab. I put on scions of Patten's Greening, Peerless and a Repka Malenka, and all made a good growth. They look fresh and healthy. I received a few Patten's Greening five years ago. They have borne a few apples the last few years. The Patten is hardy and a reliable tree to plant; also an early bearer.

I was in New Ulm a short time ago. I found out that the Horticultural Club there is dead. I am pleased to learn that so many farmers became members of the State Horticultural Society in and around Sleepy Eye.

I cut out about an acre in my timber last winter, where the timber was light, and shall replant this spring. I will plant cottonwood and black walnut. I cut cottonwood this winter that were planted in 1870; the trees averaged over one cord of wood.

Sleepy Eye, March 7, 1900. MARTIN PENNING.

Secretary's Corner.

HAVE YOU VISITED THE OFFICE AND LIBRARY LATELY?—A list of those of our membership who have visited the office and library of the society during the past month would be a long one—too long for your reading or my writing. Do not fail to call when in the city and see the society home.

SURPLUS PAPERS FOR DISTRIBUTION.—There is something of an accumulation of agricultural and horticultural papers in this office, which will be sent to any applicants without expense, except express charges. First come, first served. If you do not receive any in response, it is because earlier applicants have exhausted the supply.

LIST OF THOSE SENDING NEW MEMBERS IN MARCH:

J. E. Dodds, 1.	G. A. Tracy, 2.
L. R. Moyer, 1.	W. S. Higbie, 1.
C. E. Older, 2.	H. W. Hinds, 1.
Jas. Ogilvie, 1.	Paul P. Klevann, 1.
M. Olson, 1.	Thos. Redpath, 1.
J. S. Harris, 1.	A. K. Bush, Farmers' Institute, 34.

AN APPEAL FOR THE MINNESOTA NATIONAL PARK.—The attention of our members is called especially to an appeal in the interest of the proposed National Park, which it is hoped to locate in northern Minnesota. It is a measure which commends itself to all who are interested in forest development and protection. A method by which you may help along this movement is suggested in this article, which will be found on another page in this number of the Horticulturist.

ANOTHER WISCONSIN TRIAL ORCHARD.—At the late annual meeting of the Wisconsin State Horticultural Society, it was decided to establish another trial orchard, at some point still farther north than Wausau, where the present one is located. This determination must necessarily interest Minnesota horticulturists very much, as any results obtained are of equal value in either state. President Johnson, Secy. Herbst, Prof. Goff, Mr. L. G. Kellogg and Henry Worrant have charge of this enterprise.

HISTORY OF WISCONSIN HORTICULTURE.—B. S. Hoxie and Prof. E. S. Goff are a committee appointed by the Wisconsin society to prepare a volume under the above title. An outline of the work given in the "Wisconsin Horticulturist" indicates the comprehensiveness of the plan, which, if carried out, will cover every feature of value in the pomology of the state. In pursuance of the purpose a large number of circular letters have been addressed to those informed on the subject. This is a worthy project, and the result is awaited with interest by the brethren "over the line."

A NATIONAL PARK IN MINNESOTA.—The attention of our readers is called particularly to an article published in this number entitled, "An Appeal for a National Park in Minnesota," issued jointly by a number of popular state associations interested in the subject. To give this appeal force requires that

the reader should communicate with his representative in congress. The opponents of the measure are actively at work, and its friends must give it attention if this timber is ever to be saved for this exceedingly desirable purpose. Write today.

About the Milwaukee Apple.—Who of our society has ever given the Milwaukee apple a trial, and what has been the result? When at the Wisconsin State Fair last fall, we saw the fruit and were much impressed with its appearance and good quality. It is said to be a seedling of the Duchess, and it certainly looks as much like its reputed parent as child ever resembled its mother. Same shape, same striping, same expression. But it is said to be a true winter apple. Perhaps Father Harris knows all about it, and why we Minnesota people are not spending much thought on it.

Clarence Wedge.

Information Wanted about the Gideon Seedlings.—Mr. Elliot has secured from the late Mr. Gideon's books the addresses of several hundred persons to whom he sent apple seedlings for planting at different times. There is so much promise of valuable results from this distribution, that a communication is soon to be sent out from this office to those parties to learn the outcome. Any reader of the Minnesota Horticulturist who can give information about any of the seedling apple trees now growing in their vicinity that originally came from the late Peter M. Gideon, of Excelsior, Minn., will confer a great favor by sending the secretary, and editor of this journal, a postal card with the name and address of the parties now owning such trees and other information in regard to them.

Are You Interested in Trees?—Owing to the great demand for the publication "Forestry in Minnesota," (a 312-page treatise, by Prof. S. B. Green), the Minnesota State Forestry Association has decided to have the remaining copies bound in cloth. Until the supply is exhausted it can be had for 25 cents, (cost of binding and postage); to non-residents, 40 cents. We will also distribute a limited number of Jack Pine Seedlings, 4 to 6 in. (one of our hardiest native evergreens), in quantities as desired, at 1 cent each, postpaid.

Every one interested in tree-growth should belong to this association. Permanent membership fee is $1, including the above mentioned publication; or, upon receipt of 40 cents extra, either 50 Jack Pine seedlings, 100 Box Elder or 50 Laurel Leaf or Russian Golden Willow cuttings will be mailed postpaid. Correspondence should be directed to

Geo. W. Strand, Secy.,

Taylor Falls, Minn.

A card from Mr. O. F. Brand announces the death of E. B. Jordan, at North Ontario, Calif., on March 10, 1900. Mr. Jordan will be well remembered by all the older members of the society, as very prominent in our work from 1868 to 1886, when he removed from the state. For some years past he has been engaged in preaching the gospel. We hope to secure soon a suitable biography of our honored fellow worker.

HOME OF THE LATE MRS. ANNIE BONNIWELL.
Located five miles north of Hutchinson, Minn. She is seated in the center of the picture.
This photo was taken some four years ago, and two years before her death.

THE MINNESOTA
HORTICULTURIST.

VOL. 28. MAY, 1900. No. 5.

BIOGRAPHY OF MRS. ANNIE BONNIWELL.

W. W. PENDERGAST, HUTCHINSON.

[See frontispiece.]

Mrs. Annie Bonniwell, who died at Hutchinson, on the 16th of November, 1898, was one of the most valued and respected members of our society. We had no more faithful, conscientious and earnest worker than she. Others may have had the advantage of better health, larger facilities and greater inclination to acquire honors, but no one has been more genuinely and deeply honored. In her quiet, rural home she led a somewhat sequestered life, giving a large share of her time to her garden, shrubs and flowers, in which she felt an abiding interest. These things had far greater charm for her than the "broad fields of wheat and corn," which so many covet despite the drudgery they bring.

Mrs. Bonniwell was a kind, sympathetic and thoroughly lovable woman, as all her neighbors will cheerfully testify. Yet she was not one of those who open their hearts to everybody at first sight. On the other hand, she had few intimate friends. With her "confidence was a plant of slow growth," but her friendships once formed were never broken.

Mrs. Annie Bonniwell (nee Coles), was born in Northampton, Northamptonshire, England, in 1829. Coming to America when she was twenty years old, she settled in Port Washington, Wis., where she practiced her trade of milliner and dressmaker till the following year, when she married Mr. Walter Bonniwell, also of English birth. Their first home was on the shore of Green Bay, at the mouth of the Oconto river, where Mr. Bonniwell had been assigned the duty of guarding the government pier. While living here, Mrs. Bonniwell was the means of saving the lives of the entire crew of the Lady Elgin, which had been caught by the sudden and unexpected closing in of winter at Copper Harbor. After a desperate attempt to extricate the vessel they finally abandoned it to its fate, and set out on foot for the nearest settlement, nearly one hundred miles away. After two or three days' wandering in the unbroken forest, Mrs. Bonniwell found them, benumbed with cold and famishing with hunger. She gave them all the care that her rude surroundings would permit, unselfishly dividing with them her slender store, and soon had them so far restored that they were able to start out anew for America and civilization.

The Bonniwells lived here a year and a half, with the great solemn wilderness of pines and firs stretching away for unknown miles to the north and west, in savage grandeur, and the nearest settlers so many miles to the south that they never penetrated the cheerless wilds of the Oconto. By no stretch of even a pioneer's imagination could they be looked upon as neighbors. Month after month passed by, and nothing greeted the sight but wild

beasts and the same dreary waste of woods. No sound broke upon the ear but the soughing of wind through the evergreen tops, the howling of wolves as they prowled around the dwelling and the cry of panthers from the neighboring trees.

The next three years were spent at Wasso, a lumbering camp far back in the pineries of northern Wisconsin, Mrs. Bonniwell cooking for forty men during the winter and for a smaller number in the summer. She saw no white woman while there, but the Indian squaws came frequently to the camp, generally bringing something to "Kikishia."

From the camp just described the Bonniwells moved to Eagle River, where she was the only white woman within a radius of more than one hundred miles. When her son William was born, the only help she got was from an Indian squaw who was at the same time doctor, midwife and nurse.

Amid all her trials and hardships she never complained, nor did she even suspect that she was doing anything worthy of special credit, much less that she was a true heroine. Not so the government, which in recognition of her great services and heroic acts gave her one hundred and sixty acres of land, the patent for which was signed by President Buchanan during his administration.

The following letter from a younger sister who, a mere child at the time, lived with her through all these trying years will be of interest to all members of this society:

Chicago, Jan. 28, 1900.

Mrs. Kennedy,

Dear Friend:—

At one time on Eagle river, the chimney in the shanty caught fire, which burned one part of the roof. Annie strapped Alfred on my back and took the baby in her own arms and started for the men who had gone to see an Indian dance. Oh, it was so bitter cold! In running down the bank, we met a pack of wolves. We had to run across the lake, about a mile. The wolves turned and chased us. She first threw her own hood off, and as we were running she seized my hood and threw to them. Then she took the baby's stockings off, and every time we threw something down they would stop and tear it to pieces. In this way we could gain time. When we got nearly over the lake, the men heard our screams and came running toward us. When we got to the Indians' wigwam, the baby's feet were frozen, and Annie's hands were so badly frozen that there were large sores on them.

I remember we had a very hard time when Walter went down the river, just before the rise which took the logs down. He didn't get back for five weeks. For the first few weeks we had Indian meal to eat, but after that we were fed by the Indians. They would bring us fish and wild rice. She would give them salt for it. The Indians were very kind to us at that time, but that spring the logging company sent up another woman whose name was Mrs. J. Fox. She was very unkind to the Indians. When they came, they brought up a good many canoe-loads of provisions and stored it away in our dug-out. The Indians didn't know it was in the hole in the bank. That night they made a raid on us and drove us out and stole everything we had in the shanty. When the friendly Indians found out that they were Annie's things they brought them back.

Annie's Indian name was Kikishia, meaning a deaf man's wife. About seven years ago, a friend of mine went up there, and when she spoke the Indian name, they remembered her well, for she was very kind to them.

A young Frenchman, coming from Lake Superior to Eagle river, lost his way. The Indians found him sick in the woods and came early in the morning to tell Annie. She went with them and walked all day and all night. The Indians came back with her and brought him on two poles. She paid the Indians by giving them a bag of corn meal. She took care of the poor boy nearly all winter. The men used to say that the latch-string always hung out at Bonniwell's shanty. If they were sick, she always nursed and cared for them. I think, Mrs. Kennnedy, that I have told all the main points that I remember about her. I am very glad that you are going to write up the history of her life, for she certainly deserves it.

I remain your friend,

Mrs. Celia Duddles.

Mrs. Bonniwell first united with this society in 1890 and thereafter continued her relationship with us up to the time of her death. She was a regular attendant at the meetings, only missing, I believe, the one held just prior to her death. As an earnest, quiet worker, of constant loyalty to the association and its high purposes, she will always be remembered by all who had the pleasure of knowing her.

—Secretary.

PREPARATION OF THE SOIL BEFORE PLANTING.

IRVING C. SMITH, GREEN BAY, WIS.

Without thorough preparation of the soil it is impossible to get the best results. How shall we prepare is the point in question.

No close examination of the ordinary field of onions or potatoes is necessary to discover the fact that the first rod on the ends of the beds is frequently not as good as the part farther on. Why? The plowman did not hold his plow straight to the end, or if the conditions were such as to make a head land necessary, he did not throw out and start his furrows always on the same line, making it difficult to properly finish the end of the land. Again, perhaps you have driven over the ground two or three times after plowing, to spread manure, and you notice two lines of yellowish green foliage, especially if it be onions. Therefore, for most garden crops plow deep, pulverize thoroughly, with as little moving of horses and wagons over the soil as possible.

We will suppose you have planted onions. The seed comes up nicely, but as the plants grow you notice some places where they are better than in other places. Why? You got a crop of 600 bushels from the acre, but on one block of a few square rods there were five bushels to the rod, 800 bushels per acre; on another place only half that amount. Why? The ground is a little low at the poorer spot, and the water did not drain off quite clean; then, while applying the last dressing of manure you drove over that place three times, which left the ground somewhat hard. The best place is just as low, but a tile drain passes under that point. The soil was soft and deep, and the bed a little rounded to give the best of drainage.

Now, if we can grow four rods of onions and get at the rate of 800

bushels per acre, why can we not grow four acres at the same rate? We can. Produce the same conditions over the four acres as existed on the four rods, and the desired crop will be at hand at the time of harvest. To accomplish this, study the conditions while the crop is growing. Notice the lay of the land, the fertility, the subsoil, the drainage. How deep did you plow? Did you turn up subsoil? Is there a fine, soft seed bed for the young plants to get started in? Is there enough depth of loose soil to allow the roots to get down to water if it is a dry season? Is there enough drainage to allow the roots to get down if it is a wet season? Let me emphasize the point of drainage, as this is more likely than any other point to be the cause of the partial failure of the crop. It is not enough that you open ditches and drain off all surplus water after it has accumulated; it should be done before the seed is planted. Under-draining gives much the best results. There is much more in mechanical conditions than we are sometimes willing to admit.

If I have thrown out some hints that will prompt to more careful study and more earnest, intelligent effort to comprehend nature, my object will have been attained.

TOP-WORKING.

CHAS. G. PATTEN, CHARLES CITY, IA.

Marshall P. Wilder once said, "When we have attained an exact knowledge of the adaptation of the stock to the graft, that will be the perfection of culture."

In the above quotation Mr. Wilder very aptly expresses the thought that has no doubt impressed itself upon the mind of every one who has investigated this subject to any considerable extent, that beyond and above any mechanical knowledge or adjustment of scion and stock, there is an undefinable element in plants, as well as in animal life, that fits one for the other in varying degrees, and could we adjust it for the highest results we would come near perfection. This is a work for the experiment stations. It is too expensive and almost too subtle for the general experimenter. Time and a large number of trials must be had to meet the requirements of this work. That there is great value in it, I do not doubt.

There is a principle in it that has been little heeded or understood. Why is a given tree or plant adapted or unadapted to the other in the families or species to which they mutually belong? And why is it that two species, like our cultivated apple and the Siberian crab and its hybrids, in some cases utterly fail to unite the cell growth? That they will not we know; that there is a cause for it we cannot doubt. A microscopic examination of the cells of the two trees might and probably would reveal one reason and perhaps the only practical one; but the life element that seems almost akin to the affinities of the human soul will doubtless never be fathomed.

The putting together of the scion and the graft often unites two seemingly opposing forces, and we call it the "influence of scion and graft," and the practical point for us to determine is the equilibrium of influence. In other words, how much of the stock of a given variety will allow the graft of another given variety to have an equal balance of influence in the growth and development of the combined tree? This vital factor in the work of top-grafting, as before suggested, has been little thought of.

Top-grafting will never be a reasonable success until it is fully considered and determined with many, many varieties, and here, as before said, is work for the experiment stations.

To illustrate: The Fameuse can control successfully so much, and no more, of the stock of a Virginia crab or Duchess of Oldenburg. Give it more of the stock, and the top will gradually dwarf and die; give it too little, and it will gradually starve the root until the tree fails for lack of nourishment.

I wish that the importance of this point might be fully impressed. Varieties that are too uncongenial should never be used, for they will almost always produce short lived trees.

The harmonies of plant unions are sometimes wonderful. Oftentimes the nurseryman notices a single tree in the row that at three or four years old is two to four times as large as other trees on either side of it, all having had an equal chance. Whence the difference? Again unite two varieties in top-working, and they will not unite, only granulate, and finally dwarf and blow apart.

The writer once budded some of his North Star on two year old Duchess trees at the collar. They grew very finely for five or six years and then began to sicken and die, and in a few years more were all dead, while root-grafts of the same variety continued to flourish and grow with great vigor.

In some cases the stock will over-grow the scion, and after twelve or fifteen years the side limbs will weaken and die. But in most cases the graft will not outgrow the stock. If the proper balance has not been secured, the root will be prematurely ripened and starved. In either case the tree is but short lived and dies, probably by strangulation. In most cases where top-working is a failure had the scion been inserted in the body of the tree two to two and one-half feet from the ground the union would have been perfect, and a good tree the result.

If the graft ultimately overgrows the stock a little it will probably be for the benefit of the tree, as it will tend to thorough maturity of both top and root.

When trees are top-worked they should be cultivated into a vigorous growth, the first year or two especially, as that will insure a smooth union if stock and scion are at all congenial.

Thrifty young trees are, of course, more successfully worked than old ones, though the tops on large trees in the orchard can be partially removed one year and grafted the next.

Transcendent is an excellent stock for Wolf River and Wealthy at two or three feet from the ground. It is quite probable that this tree has been overlooked as a stock for the north. The Fall Orange will do finely on this stock.

I would suggest a thorough trial of the Sweet Russet and Minnesota. They are both strongly stamped with the apple cross in them. Both are hardy and free from blight, and the latter is free in wood. Both are likely to be a success when grafted in the limbs also.

If any apple unites perfectly in the limbs of some hardy sort, it is probably best to graft there, but in general it makes but little difference in the value of the tree whether it is grafted in the stem or limbs, so that the equilibrium of influence is maintained. Definite knowledge can only be reached by actual experiments. To illustrate: On one occasion I grafted Pink Anis onto about a two foot stem of Hibernal; at the same time this

same Anis was grafted onto a little less stock of the Virginia crab. The former grew quite smoothly, while the stock over-grew the latter, and in a few years the top will be starved out. After nine years' trial, in neither case have they been fruitful.

Top-grafting will rarely, if ever, make a shy bearer fruitful. Fruitfulness is a characteristic.

Willow Twig and large yellow crab, five to six feet in the limbs, is being choked as in the last case. Had it been grafted in the stock at three feet from the ground, it would have been a splendid success.

Borsdorf unites exceedingly well on Siberian crabs and would likely work high up on Virginia, but is a tardy bearer. Yellow Transparent works well upon Virginia, but it is still inclined to blight. Utter works well on this stock and is productive. Fameuse is scarcely a success on it, but does fairly well on Duchess. The latter is far better in the north for a stock than in central Iowa. Talman Sweet works well on Virginia.

In some cases a variety has been prolific on one stock and not on another. The more blood of the American apple there is in the hybrid Siberian the better stock it will make, providing it is a hardy, vigorous tree.

Russian and Siberian hybrids are generally too thorny, small and gnarly in wood, and Russian apples are too nearly a distinct race to be congenial to most of our American kinds.

We should be looking thoughtfully and earnestly to our American seedlings (hybrids) for the highest perfection in stocks. If in this article I have done more to invite attention to principles than I have in statements of demonstrated facts, I shall feel fully satisfied.

Mr. Philips, (Wis.): Mr. Patten speaks of a variety that is not fruitful and that top-working will not make fruitful. My attention was called to that in the case of the Malinda apple. I was sent by the Department at Washington to investigate the Malinda apple. In looking over the old orchard I found some trees that had been planted twelve to fifteen years before, and every tree was dead, and ground was used for pasture, but there were four or six Malinda trees with sprouts growing around them that were bearing those apples. I found the reason it was discarded was because it was so long in coming into bearing. I took some scions home, and I found by top-grafting on the Virginia I got fruit in four years from the scion, and in four to six years I had a barrel of apples from the tree.

Mr. Lord: Mr. Patten's paper suggests the question why some varieties will not assimilate, or why they will not succeed top-grafted on others. I think Prof. MacMillan's paper throws some light on that subject, that the pollen of flowers constitutes the plant, and that it is the growth of the pollen in the proper vehicle that produces the plant. I think it is understood that the bud which the scion contains is equivalent to the seed, that is, it will produce the same as the seed will produce. Prof. MacMillan stated that pollination was a different process from fecundation, that the plant might be pollenized and not fecundated, or the variety perpetuated. If that is the case, it shows simply that the bud in the scion being the seed is not connected with the proper form on the other side that we attempt to combine it with so that the growth may assimilate. As our president remarked, there is food for a good deal of thought in this con-

nection, and I believe Prof. MacMillan's idea is new to a large body of horticulturists. It certainly is to me. A study of the question in that light of pollination may give us some ideas of the difficulties we meet with in budding different varieties or grafting different varieties to make them grow.

Mr. Brand: I have devoted considerable thought along that line that Mr. Lord brings out, and I had concluded that it was the amount of pollen that affects the character of the plant. Where there is a very limited amount of pollen applied to the other plant the breed is produced, but I think it is more likely to counteract all the characteristics of the mother in the fruit. There was one other point brought out in the paper, if I understood the language right, and that is where he says, "the practical part in this work is the congeniality of the varieties." The idea being to get two varieties united so that the growth of the grafted variety is so perfect that it can hardly be told from one on its own roots. That is all right so far as the tree is concerned, but for the production of fruit a graft that is not so congenial as to make so well formed a tree and make so perfect a tree that you can scarcely see where the union is, will make a tree that will not produce so much fruit. The one that is perfectly congenial will go to wood, while the other will have a tendency to produce more fruit. We can make an apple tree grow without any grafting. If you give it the right degree of moisture and give your plant something to feed on you can raise an apple tree without any graft. In that case I do not think it would be as productive a tree as a grafted tree. I am growing some without grafts on their own roots. In grafting, and in top-grafting especially, the tendency is to bring them to fruiting earlier, solely on account of the obstruction to the sap which causes them to ripen earlier.

Mr. Dartt: The claim is very often made that top-grafting a variety on a hardy stock renders that variety more hardy. I have taken considerable interest in that, and I have asked some very prominent growers, some that have top-grafted largely, that question, whether the grafting of a variety onto a hardy stock made the variety more hardy, and of the most prominent I have asked, Mr. Tuttle, of Baraboo, Wis., and Prof. Budd, of Ames, Ia., have answered that it did not. Then why are top-grafted trees more hardy than those that are not top-grafted? My belief is that it is simply because you get them up higher from the ground. That trees will live and stand top-grafting better than they will standing on their own roots. You get that variety higher from the ground. Mr. Outram in speaking of the weather the other day gave an illustration of the difference between the cold at the surface of the ground and at a distance from the ground. I have read that in basements where the cold air settles it is several degrees colder than is the temperature even three or four feet higher. The cold settling to the ground, it will naturally be colder there, but a little distance from the ground it is warmer. That is the reason why it is always warmer on top of the hill than in the valley. I think that is the reason why grafted trees stand better. I had some experience with grafted Haas a good many years ago, grafted in the fork three or four feet from the ground. We had a hard winter and that Haas graft killed out, and I concluded it was because I put it up so high. If I had had it down low it would have killed quicker.

I am not especially advocating top-grafting. I think it is a fine thing to top-graft where we want to change the variety; it is a matter of necessity; but aside from that I do not believe there is any necessity or advantage in top-grafting. We can just as well grow a stock hardy enough to stand as to top-graft. Obstructing the sap is the reason why a top-grafted tree bears quicker than a tree when not grafted. It is exactly the same principle as girdling, but it is a great deal more expensive to do it. When you can girdle five trees a minute with my tree girdler, and it takes half an hour to top-grafts you soon use up the profits.

Mr. Philips, (Wis.): It is a mistaken idea that when the graft is high from the ground it is less likely to kill. My Virginia that I spoke of yesterday were grafted closer to the ground than I graft now, and those Wealthy right beside them were two feet higher than the Virginia. If it does not increase the hardiness with us it keeps those trees bearing. I have been looking over his premises, and I did not see a good top-worked tree on his place. If he had listened years ago to the instruction at our place, if he had paid attention, situated as he was, to what was told him, he would have been all right, but as far as top-working is concerned he does not know the first principles. (Laughter.) That is pretty plain talk, but it is the truth. You go to his place, and you will find limbs cut off and grafts put in two and a half inches in diameter. I did not see any less than two inches in diameter, and there is scarcely a good union in the whole outfit. Scions must be on the smaller limbs so they can heal over and not on large limbs where they cannot heal over. I asked Prof. Green why it was that a graft on a smaller limb made a better union and grew three or four feet a year more than it did if put on a larger limb. He said it was because it heals over quicker and better.

Prof. Hansen, (S. D.): We attempt in grafting to make a union of the cambium layer between the bark and the wood. We are always particular to get the inner barks, or cambium layers, together. If the grafts are of the same size you get a union that is good and grows quickly, whereas if you can only put the graft in on one side it will not heal so quickly; or you can put one in on each side or even three or four to help heal over in large limb, and then afterwards cut them off to one and in that way heal them over more quickly. If they are not of one size they do not heal over very readily. It will do in a moist climate but not in ours.

So far as top-grafting is concerned, all those problems can be reduced to a very simple principle, the sap that goes up in the spring is worked over in the leaves, and this sap comes down in the cambium layer. If there is an obstruction in the way, as for instance a ring of bark is taken away around the tree, as in girdling, so that the sap is kept back partially, that sap has to go somewhere, and it has the tendency to change the wood buds into blossom buds and causes earlier bearing. If you do not want to girdle then you can top-work it on a stock that is slightly uncongenial, as in the case of the Malinda on the Virginia crab, where the union is not quite congenial and the wood buds change into blossom buds. If you want to put it on dwarfer stock, like the Siberian crab root, which I think would make about a three-quarter full sized tree, as near as I can judge at present, there is a difference in the structure of the wood, and it has the same tendency as girdling; it keeps the sap in the top and causes early bearing. If you do not want to do that, simply want to force the tree into bearing, you can simply

bend the limb over and bind it down. That is another method of turning the wood buds into blossom buds; it checks the going down of the sap. If it does not do something of that kind, it is evident that it is the tendency of the tree to go to wood altogether instead of going to fruit. That is the tendency of some varieties, especially such as the Malinda; they get to be from sixteen to twenty years of age before bearing a good crop of apples; it all goes to wood, and the tree does not bear fruit.

Mr. Dartt: I suppose I ought to answer my friend Philips. We are always rather free in critcising each other. Well, he says I don't know the first principles of top-grafting. I say that the gentleman from Wisconsin is quite likely to see things that he wants to see and not to see things that he does not want to see, and he applied that principle to the grafting on my place. He claims he did not see a tree that was grafted right. There were a lot of them there that were grafted two years ago, not as large as he intimated, but say half as large, that are doing admirably well. I sometimes graft branches larger than I would otherwise graft, except for the purpose of maintaining a uniformity in the top of the tree. If the tree has a tendency to grow up high and straight I want to keep it headed so it will spread; then I graft the side branches so as to make a uniform top in the tree. The object was to change the Duchess to the form of the Wealthy. I grafted in the Wealthy and the Peter, and those varieties are quite congenial to the Duchess. In regard to his assertion that trees will not do anything grafted on large limbs or a large top, I have positive proof where I grafted trees in the forks—grafted some on the Greenwood crab. The trees had grown up tall and straight, and I cut off some limbs two inches in diameter and grafted them, and those trees are now grown over, and the grafts are doing well. I do not think there is a particle of decay there. Now, he says there is no reason why a tree is hardier grafted a distance up from the ground. You heard the weather man speak in regard to cold. Down close to the ground we have the trouble with the snow line. That was made a great bugaboo of and was largely treated of in the Iowa society, the snow line trouble, and I think it is often quite serious. The snow towards spring forms a hard crust and the sun shining on the snow reflects the heat and it thaws the tree, extending up above the snow a short distance. I have often felt it on my face so it felt warm. Where the degree of heat is increased a good deal it is likely to thaw out and injure the trees. I have seen trees that six inches above the ground were sound, but above that there was a black ring around the tree, and above that it was sound. I have seen evergreens that were four feet high that had a ring killed right around where the snow line was, eighteen inches from the ground; below it was all right, and the top was all right. So that I know it is more difficult to get things to grow a foot from the ground or two feet from the ground than it is where they are four or five feet above the surface of the ground. I know what I am talking about, because I have observed it through a lifetime.

Mr. Lyman: There is no question in my mind but what a scion put in a hardy stock increases in hardiness by top-grafting, especially on the crab. One reason is that the crab ripens so much earlier than the common apple, and that has a tendency to ripen the scion earlier. At least that is my opinion.

BOXING APPLE TREES.

PROF. S. B. GREEN, ST. ANTHONY PARK.

The cut shows a Duchess apple tree, with trunk protected with box to prevent sunscald and other injuries. A protecting box of this sort may be made of two six-inch and two eight-inch boards, which will make a box six inches square. Such boxes may be put on at any time. They should come

A BOXED APPLE TREE.

up above the crotches of the trees if practicable. Where this cannot be done without the limbs chafing against the top of the box, then a bunch of hay should be placed in the crotches of the trees on the approach of winter, as additional protection. I think it a good plan to fill such boxes with earth when they are put on. In something like eight years' experience with these boxes, I have found that there is no necessity of taking them off, but that they can safely remain on the year round. Occasionally I have found a tree that has sent a few roots into the earth in the boxes, but this seldom happens. The advantage of this method of treatment is that it protects from sunscald, from rabbits and mice, and from injury to the trunk by severe cold weather and in cultivation. Many of our trees that are quite severely injured in winter will recover if a considerable portion of the trunk is in best con-

dition for vigorous growth in the spring. While this method of treatment is not perhaps best where apples are raised in favorable locations on a small scale, yet for the home orchard, and especially for the orchard in severe locations, I consider it very desirable. It should be better understood by our people that a dozen trees well cared for will produce far more satisfactory results than fifty trees that are neglected.

GROWING APPLE SEEDLINGS.

H. GUERDSEN, VICTORIA.

The raising of seedling apples seems to me to be of great importance to all who desire to raise apples in this state and are not already supplied with the best and hardiest varieties, that can so easily and cheaply be obtained from any reliable nursery, or do not have the means to purchase them. Plant apple seeds from apples that are grown in this state. It was in the year 1866, when the crabs and Duchess were first introduced here, that I bought several varieties. They grew very well, and in two or three years we rejoiced to have some apples on our table of our own raising. As those trees were doing well, I thought the cheapest way to raise some more trees would be to plant seeds from those apples raised here. I planted the seed in the fall of the year, and it came up in the spring, doing well. I transplanted them when large enough, except one tree, which was left standing in the row. That tree is now bearing annually a good crop of apples of the Transcendent variety and has never blighted. Some of those trees came in bearing quite early and are good eating apples, some were worthless, and in that dry season many were root-killed. When the Russian apples were introduced and seemed to be very valuable, I requested the late Mr. And. Peterson to graft some of my seedlings, as he raised those Russian apples.

When the hard winters of '84 and '85 came, nearly all my trees were killed, except some seedlings and the Russians. I grubbed out the dead trees, and replanted them with some seedlings and hardy root-grafted trees, from which we now obtain a fair supply of good eating apples. In those dry seasons I found that seed planted in the fall would not sprout, so I saved the seed of apples in the winter and soaked it for two days in warm water; then planted it early in the spring, and it came up nicely. Had it not been for those seedling trees we should have been again without apples, after those hard winters. My land is clay subsoil. I mulch all my trees.

My advice is to plant apple seeds.

TOP-GRAFTING THE AMERICAN PLUM.

PROF. E. S. GOFF, STATE EXPERIMENT STATION, MADISON, WIS.

For several seasons past I have done more or less top-working on the Americana plum, and while I have not yet learned to succeed in every trial, I have found out some of the conditions that have always failed.

1st. Cions of which the buds are the least swollen or calloused have invariably failed, no matter how carefully they have been worked. It does not seem to matter whether the swelling has occurred on fall-cut cions, or before the cions are cut in the spring. The failure has been equal in both cases.

2d. Slender cions have always failed. Cions have often been sent to me as slender as the ordinary fence wire and sometimes even more slender.

I have worked many such cions as carefully as I could, but not one of them has ever grown to my knowledge. I infer that plum cions should never be cut less than one-fourth inch in diameter.

Some of my most successful attempts have been with cleft grafts inserted in limbs three-fourths inch or more in diameter. If the branch is so slender that it does not exert considerable pressure on the inserted cion, I wrap it tightly with grafting cloth.

Sometimes I have succeeded well with the whip graft, but by no means always.

I have tried grafting very early in spring, and at various times until the leaves on the stock have well started, and have succeeded and failed at all of these periods. I do not regard very early grafting as at all necessary to success.

I have used both fall-cut and spring-cut cions, and have succeeded and failed with both. I think fall-cut cions as likely to succeed as any, provided they are kept so as not to swell or shrivel at all. But as it requires considerable care to keep them in this manner, I now prefer to cut them in the spring.

Several good varieties of the Americana plum are such irregular, scraggy and drooping growers as the trees acquire age, that it is necessary to top-work them if we desire respectable looking trees. Certain other varieties on the other hand make fine and regular trees. One, in particular, on our grounds, of which I regret to have lost the name, grows almost as straight and upright as the Tetofsky apple tree. The fruit is a perfect freestone, and of good size and quality, but the tree does not appear to be productive.—"The Fruitman."

BEST TWO KINDS OF ONIONS AND HOW TO GROW THEM.

JOHN ZELLER, NEW ULM.

Onions are the most profitable crop to raise. I give my own experience for the last two years. In 1898 I planted one acre with onions. I used four pounds of seed, three of Red Wethersfield, one of Yellow Globe Danvers.

From this one acre I harvested 600 bushels of nice onions. The land had a crop of oats on the year before. I plowed the land just as early as the ground was in shape to work good. Two boys followed the plow and raked all the stubble into the furrow, which was all eight to ten inches deep. I used a twelve-inch plow. After the land was plowed I spread wood ashes and slaked lime over the surface. Then I harrowed it thoroughly and hand raked it very fine. Then I used a Planet, Jr., drill and wheel hoe combined to sow the seed—the rows sixteen inches apart—at the rate of four pounds per acre; the rows as straight as possible. Just as soon as the onions were out of the ground I commenced to work the cultivator between the rows, continuing this as often as necessary, and when the onions were from six to eight inches high hand-weeded them. This crop was hand-weeded three times, and cultivated about eight times.

The crop of 1899 was sowed just as soon as the ground could be worked. Before sowing I spread with good rotten manure in place of the ashes and lime and harrowed it fine; then hand raked it, so I could work the drill. This crop was only hand-weeded once and cultivated six times; not one-half the

work of the first year; but the first crop was 600 bushels, while the last crop was only 400 bushels. Owing to lack of moisture in July and first part of August, they ripened up too early, so they did not grow as large, but the price is better, and I will make more out of this crop than the first year. The coming year I expect to plant about one acre, and they will be Red and Yellow Globe Danvers. I like the Globe onions the best, at least I think they will keep better—will not sprout so much.

In conclusion, will say, select good, clean land and have it rich; use ashes and lime; work the land good; keep the weeds out, and there will be success in onions.

Prof. Waldron, (N. D.): In regard to varieties, I will say that we have raised 1371 bushels to the acre of Giant Gibraltar and raised a little over 900 bushels of the Prize Taker. Under the same conditions the Giant Gibralter has given us some three hundred bushels more than any other variety. Other onions gave us only about four or five hundred bushels.

Mr. Reeves: What kind of fertilizer did you use?

Prof. Waldron: We used different fertilizers. There is a great difference in handling the soil. Handling the soil has more to do with it than any fertilizer. We transplant the onions entirely. They are set out very early in the spring and transplanted when as large as a lead pencil. Dry weather comes in July, and the onions are not rooted deep enough to withstand the drouth, and they do not do well. We never grow more than four hundred bushels to the acres when not transplanted.

The President: Do you try to make the soil compact?

Prof. Waldron: They do not do so well in a compact soil. We sow them very thick in boxes in hotbeds. Those sets that are planted which produce the onions are little sets, the tops are about two inches long, and a good man with a dibble will set ten thousand a day. The Giant Gibralter will average a diameter of nearly five inches. No one would believe but what you had sorted them and selected the biggest. I have taken them to fairs, and they believed I had taken the biggest. An onion in July ought to have a circumference of ten inches. I would not think of growing onions without transplanting.

Mr. Smith, (Wis): I think if my friend who transplants one-tenth of an acre would transplant twenty acres he would find that his profits would not multiply so fast, particularly if he had to keep those onions a few weeks after harvest. I have yet to see or hear of those immense onions that were worth shed room in the ordinary sense of onions to supply the markets of the world. We raised annually for the last two or three years about twenty acres of onions, and before that from four to six and ten acres. Those onions are not marketed until October and November, and by that time most of those Prize Takers are worthless.

Prof. Waldron: What date do you have for marketing your onions?

Mr. Smith: October, November and December.

Prof. Waldron: I sold some Giant Gibralter as late as that, and they were just as hard and firm as any variety you could find.

Mr. Smith: Every one who has tried to keep onions knows that it is a simple matter to keep a few bushels in a very satisfactory manner, but where you have ten thousand bushels it is an entirely different matter. We have grown onions by the transplanting methods, and we did not get big crops, and you want to get a hustle on you and sell them before the main crop from the seed gets on the market. There is one grower I know who has grown the Prize Taker for several years. They were fine, large onions, and he could sell them. This year he could not sell them, and he had his stock on hand, and they did not keep. The usual average of a crop of onions raised by the best growers is from six to seven hundred bushels per acre for the entire field. On some pieces I have no doubt raised a score of times as much as one hundred bushels on a tenth of an acre, although I never reported that amount.

Mr. Grimes: I have a market gardener out on my farm who is quite an expert in onion growing, and as he is not here I will state some observations in regard to his work. Last spring he sowed one pound of onion seed, and from that one pound he raised seven hundred bushels. In the first place, when his onions are ripe he pulls them and leaves them on the ground until the tops are dry and well cured, and then he gathers them up and takes off the tops. He has crates that hold a bushel each, and he puts these onions in those crates, and stacks them up out doors, and he leaves them out as long as the weather will permit. The crates are open so as to permit the air to have free circulation, and they are in that way thoroughly dried out. Then he puts them in an onion house in the crates, and they remain there until spring. He does not propose to sell his onions in the fall, but holds them for the spring market. Last year the best he could have done with his onions in the fall was forty cents a bushel, whereas, by holding them until spring he realized seventy cents a bushel when there was a demand for them.

Prof. Waldron: What variety did he raise?

Mr. Grimes: He has raised a number of varieties, but he raises the Red Globe principally.

Mr. Yahnke: I have had an experience of forty years in growing onions. I have a patch where I have grown onions for twenty-five years in succession and had but one failure, but I have never had such success as this gentleman speaks of, and I have never transplanted. I raised as high as six and seven hundred bushels to the acre. I never will raise those large onions, because I cannot sell them to my customers. For home market I prefer to sell a fine grained onion and not too large. As far as the last point is concerned, we must raise onions that possess keeping qualities, and I raise only those varieties that have that quality. Then there is judicious harvesting. The keeping of onions depends a great deal upon the harvesting. As soon as the onions are ripe they should be pulled and thrown on the ground where it is dry, and they should not be allowed to remain longer on the ground in the sun than until they are dry, otherwise they will become strong. As soon as they are dry pull off the tops. If you do not want to cut them off, you can leave an end two inches long. Then store them in some place where they will have a good chance to dry out. In Russia where

they keep onions the year round they have a method of drying them. They take top and all and braid them together and hang them up above an oven, you might say, a dry kiln. When the onions are perfectly dry they can be kept any length of time. Mr. John Gage, of Waseca—I met him last year—told me that two years ago he raised several thousand bushels of onions and built extensive buildings to store those onions in, and in the spring the larger part of them were grown. He sent a carload to St. Louis and I don't remember how many dollars he had to send after them to pay the freight. If he had gone to work and dried them out and sold them, instead of building his house, he might have made something. Almost everybody has the same experience; it never pays to keep onions over in this country. It does not pay to hold them until spring, because onions from the south are shipped in here too early.

CELERY.

N. J. JOHNSON.

(Southern Minnesota Horticultural Society.)

I have been experimenting considerably in growing celery. In the first place I commenced growing celery about seven years ago on high land. I made big preparations, went to work and dug a well, set out a lot of celery, and it kept me busy most of the time carrying water; in fact, I spent more time carrying water than I got for the whole celery crop after it was marketed, to say nothing about the work of hoeing and cleaning for market, etc.

I could not see any money in raising celery; in fact, I was money out of pocket. The first year I raised no celery. At the same time I was filling up the slough down on the bottom lands with manure, and I scraped about two or three inches of dirt on the top of that. This slough was nothing but mud and water.

By the next spring this manure was pretty well decayed, and I thought I would again try a little celery; in fact, I did not plant that celery until the middle of August, and by the middle of October I had the finest celery that ever was grown. That gave me an entirely new idea. You understand that manure was fully decayed when I planted the celery, and at the same time the water was soaking into the manure from the bottom as the river happened to be high that summer, so the water soaked through the ground into the manure and into the roots of the celery.

The next year I thought I would try a new experiment. I went to work and plowed a furrow—plowed twice in one furrow, that is, forward and back. I struck the furrows about three feet apart and filled them full of manure, and I had a pipe and hose attached to the spring, so as to let the water run in the furrow and fill it full. After it was thoroughly soaked, I covered the manure with about two inches of dirt and then packed it down with my feet in a straight row. I planted about six inches apart in the row and three feet the other way. After I had one row planted, I put on the water to let it soak thoroughly and then changed it from place to place, so as to keep the celery watered about two or three times a week. The plants will stand a long time before they commence to grow; in fact, they grow but little till the manure commences to decay. When the celery starts to grow, you can see it grow from day to day, but it don't grow much from the time it is planted, about the middle of April, until the middle of June, when it takes a start.

About the middle of July it is ready for bleaching, and about a month after that it is ready for market. The way I bleach celery is to take ten-inch boards and set one on each side, as close up to the celery as I can, and nail about three cleats across to hold the boards together. I still keep the water running in the rows.

It is impossible to try and grow celery in this manner without irrigation. If you have pretty well decayed manure you can grow celery in the new way for private use with but very little water.

I have heard that you could grow fine celery on black, mucky, low land, and I have some of that, too. In fact, I have all kinds of soil. I thought last summer I would try some celery on the black muck. I plowed under a lot of old manure, and kept the water on it from the spring, just as I did on the other celery planted the new way, but I got an inferior celery all the same. In growing celery with manure and water, as you may call it, it grows up so quick, and that is what makes it so white and tender. It is way ahead of any other celery, that is what everybody says—and, furthermore, it was the finest celery exhibited at the state fair.

There is another thing I will say to you about this new way of growing celery with plenty of water and plenty of manure, you can grow better celery in clear sand than on any other soil. I have a piece of ground next to the river where there is nothing but sand, and that is where I raise the very finest celery.

A year ago this summer I thought I would try another experiment, to try and kill two birds with one stone; that is, I thought I would see if I could not grow almost double the amount of celery on the same amount of ground. I went to work and set out one double row, six inches apart each way, and by the use of the same amount of water and the same work with the exception of planting two rows in place of one. By the time the celery was ready for market, I had just as good celery on that row as from the single row. Last summer I planted all of my celery that way, and it is a great saving of labor, in place of the single row system.

IS A FARM HOUSE ENTITLED TO INCUR THE EXTRAVAGANCE OF A LAWN?

MISS LUCIA E. DANFORTH, NORTHFIELD.

In one of the Buddha's many appearances on earth before he became the Buddha, he lived as a Brahman and had a wife, named Nauda, and three daughters. But the future Buddha died and became a golden mallard, and his wife and daughters were cared for by their charitable neighbors.

The future Buddha, now a golden mallard, taking pity on his family, appeared on the ridge pole, explained that he was their father, and asked them to sell his golden feathers, one by one. This gave them a comfortable living. But after a time the mother said, "There's no trusting men or animals. Your father might go away. Let's pluck him clean!" So they did so, against the protests of the future Buddha. But the feathers had this property, that if plucked out against the will of their owner, they became plain crane's feathers. So Nauda and her daughters had nothing but a pile of worthless grey feathers, and the golden mallard never came to them again.

What has this to do with the subject, "Is a Farm Home Entitled to Incur the Extravagance of a Lawn?" Very much.

Country life is the beautiful, beneficent bird with golden feathers; Nauda is the farmer who is so anxious to become quickly rich that he strips this beautiful, God-given thing of every lovely, golden feather and leaves it an unsightly, unresponsive object of pity.

In the first place, it is not an extravagance. The best land is worth $50 to $70 an acre. Half an acre at the very least can easily be spared for the lawn proper, or, better than this, an acre.

Happy is the farmer who finds his farm already supplied with oak, elm and maple, or other indigenous Minnesota trees, but if they are not there already the expense of securing and planting them is slight. Then, of course, this yard needs birches and one or two staminate willows, for grace, and some evergreens on the north and west sides for winter beauty.

One thing, more than all else, marks a lack in American country places over those in England, and that is shrubbery. In our climate there are many things which we can not have, but the golden-leafed elder, syringa, spiraea Van Houtii, purple-leafed and common barberry, lilac, snowball, roses of all sorts, hydrangea,—these are a few of the many, many beautiful shrubs to which Minnesota extends a welcome.

For the grassy part—which for ease in its care should be as unbroken as possible—blue grass and white clover are inexpensive and satisfactory.

As for the care of these things, none of us who have spent hours early and late in shaking, raking, burning, spraying, to rid our trees of the terrible oak caterpillar, can say it is an easy thing, and if help had to be hired it might seem an expense if not an extravagance; but none of us count the hours spent in caring for friends who are ill a hardship, and the pleasure of saving a tree is reward enough for all the labor expended. The cutting of the grass is another problem. If the lawn is large and unbroken much can be done with a field mower, and on much frequented roads it can be partially solved by fitting it to that other problem—tramps. At least half of them have been found by experience to be glad to mow the lawn or remove from it, for the sake of a dinner, the esculent, beautiful but ubiquitious dandelion.

A most charming addition to a lawn, where possible, is water—a pond, a brook, a fountain or even an artificial aquarium. It is not always feasible but is so more often than one might suppose.

The apparent size of a lawn or house surroundings may be increased by the judicious arrangement of the adjoining parts of the farm. Some beautiful farm houses, with well kept yards, lose much of their beauty and general effect by having by their side almost the only unsightly thing a farm can produce, a hog yard, which, by proper planning can be in some inconspicuous place.

An orchard is just as beautiful in its way as the most perfectly kept lawn, and one should always be situated where it can add to the beauty of the house surroundings. A horse lot or sheep pasture adjoining the lawn may be effective.

Two things should be kept in mind: what the farmer sees from his windows should be beautiful, and what the passer-by sees in looking at the house and house surroundings should be beautiful.

And the reason for all this? Who of us has not been filled with righteous anger at words of Hamlin Garland, in a recent book, words false in spirit and false in fact, about the drudgery, lack of art, lack of literature, lack of pleasure in the country. But the most painful thing is that in a few, a very few instances, it is partly true. What poetry is to prose, that country

life is to other life. Prose is necessary and sometimes beautiful. Poetry is just as necessary and should always be beautiful. That which makes country life beautiful to those who live there as well as to those who pass through it, that which endears it to the children who are brought up in it, is not an extravagance, but an investment in character.

One who has been brought up in a country home possessing the lawn where the family have their Sunday night suppers and holiday dinners; the clover carpet under the low oak, devoted to Shelley and Keats; the secluded nook, where one studied calculus in vacations; the birches, in whose shelter one shelled peas and dreamed great dreams; the pond, where one learned to skate; and the brook where trout sported and water cress grew—such a one will have a heart never to be turned from country love. Is the price of an acre of land, a lawn mower, a sprayer, some grass seed and a few shrubs too high to pay?

But the satisfactory thing about this whole subject is, that it is a plea for what already exists, and that whatever picture of country life is drawn, we can many, many of us look at our present surroundings or past history and say: "If only the writer had lived in my home and described it, that would be a country home worth telling of."

MODEL OF CONSTITUTION FOR IMPROVEMENT CLUB.

1.—This Club shall be called the (————) Improvement Club.

2.—The objects of this Club shall be to cultivate public sentiment in favor of improving and beautifying the church, cemetery and school and other public grounds, the streets and roads of the vicinity, and the home grounds of the residents.

3.—The payment of (——) shall constitute membership during the current year of the club.

4.—The general officers shall be a President, Vice-President, Secretary and Treasurer. These officers, with three members—all to be elected by ballot—shall constitute a Board of Directors. The appointment of all Committees shall be made by the President, subject to the approval of the Board of Directors. The Board of Directors to arrange programs in advance for the meetings.

5.—Seven members shall constitute a quorum for the transaction of business.

6.—Meetings to be held once a week during the winter; at other times, twice a month (or once, as seems most convenient.)

Suggested Program for First Meeting.

1.—A song familiar to all present.

2.—Five minute talk by the president (introducing object).

3—A short, appropriate recitation.

4.—Music.

5.—Paper. Topic: Reasons Why the Schoolground Should Be the Most Beautiful Spot in our Neighborhood. To be followed by general discussion of the subject. (On account of its educational influence, it will affect the church grounds, the streets and roads, and also the homes.)

6.—Fifteen minutes for social converse.
7.—Music—familiar song.
8.—Five minute paper: Subject—My Favorite Tree.
9.—Recitation.

Meeting not to be over one and one-half hour in length, giving some time for those who have leisure for sociability after the meeting. Begin promptly on time.

IMPRESSIONS FROM THE FARMERS' INSTITUTE.

C. E. OLDER, LUVERNE.

The first thought is that the time for old-time methods in farming and husbandry, as well as in horticulture, has passed, and new, up-to-date methods must prevail if we would succeed in our undertakings. Times have changed, and change we must if we keep up with the times.

We must raise more to the acre and use less acres, less help, less expense, raise our living on our farms, and farm for a living ,and give up raising large acreage of wheat with the object to make money to buy our living.

We should finish off our stock on the farm ready for market, and utilize all of our coarse feed as well. We should grow clover to make the land richer, to raise more corn, to feed more hogs, cattle and sheep, to raise more fruit for the family, so they will be more contented and happy on the farm, to set out groves and windbreaks, evergreens for shelter and ornament about the home—and to do the latter you must get your nursery stock just as near your home as possible, of your local nursery if possible, in fact must use as good common sense about this branch of farming as any other. We must have up-to-date machinery, that will do with one man and team what five or six men could do without it.

Mr. Terry, of Ohio, told how he built up an old, worn out farm in Ohio, so he could grow as high as fifty bushels of wheat per acre.

Mr. Bush, on raising fruits and shelter belts, told of the great change in conditions in Freeborn county, from what it was before evergreens were so extensively planted out, and of the absence of the hot southwest winds they used to experience. Great good will come from his talk on this subject.

Mr. Greeley's talk was sheep. Well, you can hardly tell what a man won't say who is an enthusiast on sheep. The only wonder is that every farmer does not keep some of them.

Mr. Trow is at the head of butter making, and his methods as explained gave good food for thought and effort in that line.

But, however, it makes no difference how nice butter, meat, vegetables or other foods come into the house if it is spoiled in cooking, and Mrs. Laws brought this matter out as no other one could do. Her remarks, although "all too short," were good and are remembered by some people every time they cook a meal or sit down to the table.

In some respects we were short of our expectations, especially on the horse question, which was not touched upon, owing to the absence of Dr. Currier; but on the whole we had a very profitable institute. May they come oftener!

RULES GOVERNING EXHIBITS OF FRUITS AND FLOWERS AT MINNESOTA STATE FAIR, 1900.

(Extract from Premium List.)

Superintendents are required to have their exhibits in position by the Saturday night before the fair opens.

1. To be entitled to compete for premiums and receive awards, exhibits must be in place by the Saturday night, Sept. 1st, before the fair opens. Small exhibits from a distance will be put in place by the superintendent where previous notice has been given and the necessary entry made by the exhibitor.

2. All the exhibits of fruit in each class will be placed together, under the direction of the superintendent. No one can exhibit in both the amateur and professional classes at the same fair.

3. All articles competing for premiums must have been grown in Minnesota or made from Minnesota products, and by the person in whose name they are entered, except as otherwise noted. Any deviation from this rule shall work a forfeiture of any premiums awarded thereon.

When required, a statement to the judges must certify that they were so grown or made.

4. A collection shall consist of three or more named varieties, and they must be placed together, and a list of all the varieties included therein must accompany the collection. Any variety may be exhibited in a collection except a seedling, the original tree, bush or vine producing which is the property of the exhibitor. The latter part of this rule does not apply to collections of seedlings.

5. A plate of apples, pears and peaches should consist of exactly four specimens; grapes, four bunches; crabs, hybrids and plums, ten specimens; blackberries, gooseberries and sand cherries, one pint.

6. Each article must be correctly labeled with its name, or, if an unnamed seedling, it must be so stated; labels and pins of a uniform size for this purpose will be furnished exhibitors by the superintendent and must be used by them.

7. Each exhibitor must place his name and address conspicuously on his exhibit.

8. Separate articles must be furnished for each entry. Not more than one plate of any variety will be permitted in any exhibit, nor can any variety be shown under synonymous names. Apples of the same type, such as Borovinka and Anisette, of the Duchess type, and Silken Leaf, Romna, Lieby, etc., of the Hibernal type, will be considered as duplicates in collective exhibits. The report of the La Crosse Commission, appointed by the Minnesota State Horticultural Society, will be recognized authority in matters of Russian nomenclature.

9. Exhibitors may replace with fresh fruit any specimens that show a tendency to spot or decay at any time during the fair, except when the judge is working upon the class to which it belongs.

Decayed, injured or inferior specimens must not be exhibited, and when such specimens appear in a collection, not only will they not be counted, but they will be considered by the judges as lowering the comparative stand-

ing of the exhibit. Taste in arrangement and neatness in the keeping of the exhibit will also be considered by the judges in making awards.

10. Seedlings—

(a) The exhibitor of a seedling must be the owner of the original tree, bush or vine producing the same, or his sole authorized representative.

(b) The exhibitor of a seedling which receives an award, except in a collection, is required before receiving the premium money to furnish a written description of the tree, bush or vine producing such seedling, its location, age and history, and the owner's and originator's names and addresses.

(c) Seedlings, to receive awards, must be characterized by excellence at least equal to that of an established variety.

(d) A seedling that has received an award at any former Minnesota State Fair will not be awarded a premium, except as part of a collection.

11. Fruits may be exhibited that have been preserved in cold storage but not by any other process, except as otherwise stated.

12. Where the number of competitors in any lot is less than the number of awards offered, the judges may, at their discretion, award the lower prizes, omitting the higher ones, but premiums will not be awarded on inferior collections or specimens, even if there is no competition.

13. Exhibitors are requested to make entries with Secretary E. W. Randall, Hamline, at least one week before the opening of the fair, and positively no entries will be received after Saturday, September 1st.

14. The above regulations will be rigidly enforced.

The following score card will serve as a general guide to exhibitors in making up their exhibit, and will be placed in the hands of the judges to be used, so far as seems convenient and practical, in making their awards.

SCORE CARD.

1. NUMBER OF VARIETIES.—The collection containing the largest number of varieties will be marked 30; others in proportion.

Varieties whose deficiency in size, quality or form would debar them from a place on the standard list will not be considered.

2. SIZE.—The collection containing fruit of the largest average size will be marked 20; others in proportion.

3. CONDITION.—The collection containing fruit in the best condition will be marked 20.

Fruit should be sound and free from disease, blemish or deformity of any kind. Stem should be present, and calyx, when natural to the variety.

4. COLOR—The collection containing fruit of the highest average color will be marked 10.

5. UNIFORMITY—Best collection in this respect to be marked 10.

Plates should be composed of specimens similar in size, form and color.

6. NEATNESS AND TASTE IN ARRANGEMENT.—Best collection in this respect to be marked 10.

Anything that adds to the attractiveness of the exhibit to be considered under this head.

N. B.—The premium list will appear in the June number.

EXHIBITING FRUIT AT THE MINN. STATE FAIR—FROM THE JUDGES STANDPOINT.

PROF. S. B. GREEN, ST. ANTHONY PARK.

From the standpoint of the judge of fruit at our exhibitions, it seems to me that the most important thing for the exhibitor to remember is that he should abide by the rules which have been laid down. He should get a set of the rules and study them carefully and their application to his case. These rules have been made with the idea of protecting the exhibitor and also giving him every opportunity to make a good display. One of the most annoying things to the judge is to have the exhibits not quite in place at the time the fruit is to be judged, or to have the entry cards mixed up, as is frequently the case with some exhibitors. No judge wishes to enforce a rule without regard to the spirit in which it was passed, nor to rule out an exhibitor from the fact that he has not complied with some small matter, but it may delay his work very much in waiting for some exhibitor that could just as well have been on hand as the others. I know well, from a wide experience, that there are some exhibitors whom I expect always to find a little behindhand in getting their exhibits in place, and who are pretty sure to have their cards mixed up.

The exhibitors should understand what good fruit is. I know too often the idea prevails that size only is the thing on which the award is decided, and, may I say it? I have seen judges who awarded premiums to the largest fruit, without regard to many other qualities. It seems to me that exhibitors should be given clearly to understand that what is considered the best fruit are normal specimens, free from injury by fungi or insects, that have the proper color for that season of the year for that particular variety, and are clean and have the stem on. All things considered, the most normal specimens should receive the premiums.

Occasionally we meet dishonest exhibitors, but they are the exception rather than the rule; but almost every year I have noticed efforts to substitute one variety for another, with the evident hope that the judge would overlook the substitution, and that they would receive the premium. I know one exhibitor who seems quite inclined, so that I have come to look for it for the last few years, to substitute small Wealthy for Snow apples. Some exhibitors will exhibit large specimens with rotten spots on one side, and turn the spot down so that the judge will not see it. All things considered, a rotten apple should always take second place to a sound apple of the same variety of medium size, no matter how large the wormy or rotten specimen is.

Try and keep the collection separate. Do not have the collection of crabs, etc., mixed with the general collection of apples, nor the apples mixed with the general collection of crabs, etc.

If you think you are not fairly treated by the judge, and that there has been some mistake in the award, do not go to the judge about it. Go to the superintendent of the department. He can do more to make the matter right, and do it more easily, than the judge can. Judges, as a rule, intend to do what is right; but they are mortal and not perfect men, and there is no use of expecting them to do perfect work. If they make mistakes, they are generally willing to rectify them. The tricky professional exhibitor is the

one whom judges abhor. But of all others, I know of no place where the true moral fiber of a man is shown more completely than in competing for premiums. The man of weak veracity is soon conspicuous by his weakness.

EXHIBITING FRUIT AT THE MINNESOTA STATE FAIR.—FROM THE EXHIBITOR'S STANDPOINT.

CLARENCE WEDGE, ALBERT LEA.

The labor involved in making an exhibit of fruit at the state fair, whether it be a single plate or a large collection, naturally resolves itself into three separate undertakings, viz: selection, transportation and arrangement. The beauty, usefulness and premium winning capacity of the exhibit when it is finally displayed upon the tables will all depend upon the thought and skill that has been put upon each of these matters of preparation. Let us consider them in their proper order.

First. Selection. It requires considerable judgment and watchfulness in order to have the early fruit picked at the time that will secure as much as possible of the natural color and before it has become too soft to endure handling and exposure. The common fault is to let the early varieties stay on the tree or vine too long. An under-ripe fruit, if about up to its full size, and plump and sound makes a much better appearance on the tables than a fully colored specimen that has lost its freshness and begun to "go the way of all the earth," and I have repeatedly noticed that over-ripe Tetofsky and Transparent apples that made a passable show during the first day of the fair quickly became black and disgusting when exposed but a few hours to the trying air of the hall, while those of the same varieties picked before they had lost their firmness made a creditable if not a handsome plate to the end of the show. For a plate of such early and perishable varieties I always select about double the number required, so that when the fruit is opened up on the grounds there will be quite a number to select from, as it frequently happens that the specimens that we expected to keep best prove for some unknown reason to have been the most perishable. In picking this early fruit we always carry our packages and paper wrappers to the orchard, and try to do all our work with the least and gentlest handling possible.

Perhaps the most common mistake made in selecting specimens of fruit for exhibition is that of picking out the largest of each variety and ignoring the equally important points of beauty, soundness and perfection of form. The true way is to gather a number of specimens of the largest and handsomest of each variety as they appear upon the tree or vine, and placing them upon a table before you, where they can be critically examined, first throw out all that are deformed, wormy, diseased or decayed, and then make up the plates from the largest and highest colored specimens that remain. This is the quickest and surest method of arriving at the best in hand, and if in the straits of a light crop and a bad season there is strong temptation and almost a necessity of admitting some defective specimens, have a care that the blemishes you admit are such as may be most conveniently hidden and not such as will openly disgrace the exhibit.

The most inexcusable mistake that can be made is that of padding out a collection with plates of inferior fruit. Don't do it! It is an insult to the public, an eyesore to the superintendent, and a disgrace to the horticultural fraternity. People take their time and pay admission to the fairs to see something attractive, and there is no more attraction in a plate of

misshapen, wormy or rotten fruit than there is in a lame horse, a humpbacked pig, or a tuberculous cow. Stock men have the good sense to keep that grade of stock at home, and if we would retain the interest of the public in our fruit exhibits we must show an equal appreciation of the tastes and feelings of that public and begin to realize that the day when an apple was a novelty, simply because it was grown in Minnesota, has passed and will never return. It is far better to cut down a collection to very narrow proportions than to admit anything that flagrantly offends the eye of the average fair goer.

Each plate should be labeled carefully as it is packed away. We have a system of labeling each apple that we have found very convenient. Having prepared a complete list of all the varieties we propose to exhibit, we number them on that list 1, 2, 3, etc., from top to bottom, and having this list with us as we select the plates of each variety we write its number with common ink and smooth gold pen in the cavity of each apple as close to the base of the stem as it is convenient to reach. We thus have each apple safely labeled, however far it may happen to stray from its proper fellowship. It may be well to state that apples should be shown with full natural stem and with as much calyx as naturally belongs to the variety.

Second. Transporation. This is a matter that should be carefully provided for, or fruit of the highest excellence may be so bruised that it will be hard to make it look presentable. For the small exhibit, that ought to be sent to the fair by hundreds of amateurs all over the state, no package is better than the common splint market basket, with the usual handle that makes it easy for expressmen to move it about and prevents anything being piled on top of it. Each specimen should be wrapped with one or two thicknesses of newspaper, and the sides and bottom of the basket padded slightly with excelsior, hay or crumpled paper, and when filled a piece of stout express paper or decent looking cloth should be tied over the top of the basket. Mark the package plainly with your name and address, and send it, express prepaid, to the "Superintendent of the Horticultural Building, State Fair Grounds, Hamline, Minn." If the fruit has been properly entered the premiums that it receives will duly be returned. Such fruit should reach the grounds during the latter half of the week before the fair.

If the exhibit is a large one, and it is not thought best to take the trouble to prepare special packages for it, we would still prefer handled baskets of some kind rather than boxes, as they are so much less likely to be rolled about and the fruit within bruised. There is, however, no package that we have seen that is quite so satisfactory for a large exhibit of apples as common egg crates, fitted with home made fillers. They are very cheap and light, and the expressmen, having already formed the habit of handling them "like eggs," we may expect the most decent treatment to be accorded our fruit while in their hands. We use fillers of two sizes, each 2¾ inches deep, one holding sixteen medium sized apples, and the other nine large sized apples. These fillers are made from common building paper, and any bright boy can arrange a pattern and make them if he be furnished with a sample of the common egg filler as a guide. Living over a hundred miles from the fair, we have never had any trouble with bruised fruit since using this package, and as the crates are so light, and are returned to us by the express company at a cost of only ten cents each, we feel that it is not only the best but the cheapest package we can use.

Third. Arrangement. This matter will be very easy if the fruit is on hand in perfect condition and plainly labeled. Do not be tempted to put more than four apples on a plate, or to slip in a specimen of any similar variety to make up a plate that may for some reason be short the required number. Neatness, honesty and good temper are the three cardinal virtues of a good exhibitor. Arrange the collection so that sizes and colors will be somewhat contrasted. A plate of bright yellow, medium sized apples will set off a plate of large red apples to excellent advantage; so also will the red and white grapes contrast and make distinct and interesting a somewhat monotonous collection of blacks.

After the exhibit is in place as you wish it to stand, go over the apples with a soft cotton rag and wiping off all dust polish them till they take on that brilliant finish that catches the popular eye. When everything is as clean and bright and pretty as can be, label each plate with the labels furnished by the association.

Finally, by cultivating the feeling that the rules and regulations are intended to promote fairness between exhibitors as well as the general success of the fair, and by being courteous and quick to respond to any suggestions or requirements of the superintendent of your division, there will be small chance of your being found among that gloomy minority that never fails to complain of the partiality of the judges and the arbitrary measures of the officers.

It may be well to mention the fact that the rules of the fair now require all fruit to be entered and on the tables the Saturday night before the fair opens, and that it is a safe and good plan to enter whatever fruit you are likely to exhibit as soon as you receive the premium list, which is sometimes a month or more before it is possible to know just what the season will bring forth. However, as there is no penalty for failing to fill all that we have entered we always make out this "blanket" list as soon as the premium list is received and thus avoid the danger of forgetting the important matter of making entries.

Mr. Dartt: I am sorry I did not hear all of Mr. Wedge's paper, but I want to say something on that subject of exhibiting at our fairs. Now we may ask the question, what are fairs for? You will say they are for the purpose of educating our people and to encourage the production of fruit and its exhibition. What do they look to be like? They look to be like an effort to bring out the biggest show possible without having to grow it. The man makes a grand show on the tables with his sweepstakes entry, and he walks proudly up and down before his grand exhibit, while the fellow who raises his own fruit, who has got something good for the country, he should have the premium. In competition with those big sweepstakes premiums it discourages him. I am not going to take my little batch there to be sneered at.

Then those rigid rules. What are they for? They are to accommodate the judges. Who ought to be accommodated? The man who is appointed judge to look over the fruit or the man who raises the fruit? I claim it is the producer who should be accommodated every time. I might say that I have been a judge at fairs,

and I have been an exhibitor at fairs; I do not remember the last time I exhibited at the state fair, and I think I am through with the fairs, practically speaking. I was not so mighty hard up for the amount of money I would get as a premium that that was an inducement for me to exhibit, but I wanted to make a practical exhibit for our section of the country, particularly of Steele county. When I got to the fair with my exhibit they said, "Now your single plates must go in such and such a place; your winter varieties must go in another place; your crab apples must go in another place," and so on through the list, and my exhibit was all divided up. My friend Harris was there with his sweepstakes, and he had a grand exhibit. A man asked me where my exhibit was. I told him part of them were here, and part of them were over yonder, and a part were in another place. I was ashamed of my exhibit, and I never made another entry at the state fair. I believe there should be a radical change; I do not believe you should offer a sweepstakes premium at all. You should not offer a premium for anything that a man did not grow. How would the stock raisers like it to have a sweepstakes premium offered and have a fellow go here and there getting the best stock and taking the biggest money? They would not like it.

I believe those rigid rules should be done away with. They should make a rule to accommodate the exhibitors. If one judge thinks it is too much trouble, get some one else; they will find some one who will do it without having those rigid rules.

Now, in regard to the rule compelling exhibitors to have their exhibits in place on Saturday night before the fair opens. It would do all right for those near by, but it would discourage the general exhibitor. I think I have said enough to give you an idea of how I feel about this matter.

Mr. Underwood: As I have had the misfortune or the good fortune, as you might term it, of being connected with the fair management for three years it is very interesting for me to listen to these criticisms of the management, and I hope I shall be able to show in some way that the management is not so much at fault as set forth by both of the speakers on that subject. I wish to compliment Mr. Wedge on the very excellent instructions he has given to exhibitors regarding the preparation of their exhibits at the fair, and I hope that all of the exhibitors, including Friend Dartt, will study those instructions and profit thereby.

Now so far as the criticisms are concerned—I do not know whether I can refer to them all, there are so many. In the first place, touching Mr. Wedge's paper, I think his only criticism was that exhibitors were asked to place their exhibits and have them complete the Saturday night before the fair opens. You will bear me out that the state fair is not infringing on Sunday in any way if you get the exhibits ready Saturday night, and you will have the whole week to get ready. If exhibitors are so chary of their time that they cannot finish Saturday night we cannot help it. Why do we have that rule? We advertise to the world that the Minnesota state fair will be open on Monday, Sept. 4th. Mr. Dartt and some other exhibitors want us to wait until about Tuesday before any

one can go there and find the horticultural department ready. Is it not an insult to the people who pay their admission to the state fair to come there on Monday morning and find Mr. Dartt with his boxes and baskets all in disorder and his exhibit not ready? For that reason we should insist that exhibitors should have their exhibits ready by the time the fair opens. If we cannot have the exhibits ready until Monday or Tuesday we will have to start the fair on Wednesday, and that is just what we are talking of doing. That is what we are talking of doing and having a ten days' fair. It is not businesslike to open the fair and not have the exhibits in place. If you should have a position on the fair board and come in actual contact with the work there you would agree with me in what I say.

With regard to sweepstakes. We have liberal premiums offered by the State Agricultural Society that are proposed and arranged for by the State Horticultural Society, under their advice and direction, and there are now liberal premiums offered entirely outside of that source. Some good friends of the state fair took it upon themselves to see if they could not hold out still greater inducements to make the Minnesota state fair in a horticultural way the greatest fair in the United States. Our friend Mr. Elliot, with his usual loyalty to the State Agricultural Society, went out of his way to induce Mr. Thomas to give this sweepstakes premium. Now, I do not see why any one should get up here and criticize Mr. Elliot, who got Mr. Thomas to offer one hundred dollars for the best show of apples in Minnesota. Has he not a right to do what he pleases with his money? There are liberal premiums offered if this sweepstakes premium were not offered, and that is outside of the premiums offered by the State Agricultural Society. What good does that sweepstakes premium do? It does this, it gets up the finest exhibition of fruits and apples that we can possibly bring together in the state. Is that of any advantage to horticulturists? I think that is a good advertisement of the fact that Minnesota has got some good fruit that can be gotten up, and we would like to have enough sweepstakes premiums offered to fill that whole building. I do not think it is necessary to be so critical of those things. Let each one go ahead and do his part. If Mr. Dartt will come in and do his part and not be so critical of what other people are doing, he will have a good time and will have justice done him, and I do not see any reason for his staying away because his apples were put in one place and his crabs in another, and he has nothing to show because they were separate. He wants to run the state fair and every other exhibitor. Suppose every exhibitor should say to the superintendent, "I want to put my apples just where I want to." When the judges come around here is Mr. Dartt's plate of Wealthy, over yonder is Mr. Philips' plate, then they have to go somewhere else to look at my plate, and so they have to hunt all over the building for the Wealthys, and the same with every other variety, and keep the fact in their minds how each plate looks and judge which is the best. There is no reason in such an argument. The rules that govern the state fair are the result of long years of experience of the most practical horticulturists we have, including such men

as Mr. Elliot, Mr. Harris, Mr. Latham, Mr. Philips and a number of others I might mention, that have had this matter in charge. I can speak freely of this subject because I have not had anything to do with it, but I can see no use in these criticisms of the management of the state fair, and the best thing Mr. Dartt can do, or anybody else for that matter, is to come in and make the best exhibit possible and have a good time, and start long enough ahead so as to have the exhibit in place and ready on Monday morning when the fair opens. As superintendent of that division this year I insisted that the horticultural department must be ready on Monday morning, and it was ready on Monday morning, and so far as the horticultural exhibit was concerned people got their half dollar's worth.

Mr. Harris: Mr. President, I must confess I did grumble a little about one of the rules, and that was in regard to putting up the cold storage fruit on Friday and Saturday. Before the week is gone it is all used up. For those big exhibits it is all right. I would suggest that they allow fruit to come in until Monday noon. Instead of objecting to those stringent rules I think we will make them still more stringent, and we will learn by experience where we can better them.

Mr. Philips, (Wis.): As one of the judges in the fruit department at the state fair last fall I noticed some things that I thought could be bettered, and being an outsider, of course, I may speak of it. Of those rigid rules that Mr. Underwood speaks of, compelling every one to have his fruit there ready for exhibition on Saturday night, ready for the opening on Monday morning, I have just this to say: I received that notice and tried to live up to it. I brought my fruit and put it up Saturday afternoon. The trouble with your fair last fall was—and I looked the fruit over every day—that while there were some men who brought their fruit in from a distance, there were others bringing in fruit until Wednesday, and that makes an injustice to the man who comes a long distance with his fruit. If you are going to have that rule, enforce it, and every man who is not there on Monday morning with his fruit rule him out. There were plates of apples there on Tuesday that became a little soft, and on Wednesday they had a better plate in place of them. I don't know how it happened, but then I am not supposed to know anything about what happens in Minnesota. If you make a rule live up to it.

In regard to this large show for the sweepstakes premium. In Wisconsin years ago we did not have this wide open policy. We obliged a man to show his own fruit, and if a man was honest he did not bring in a big show. But Mr. Dartt intimated that years ago the other fellows were dishonest and showed fruit that they did not raise themselves. In order to do away with this, this premium is offered, and a man can get his fruit for this entry anywhere in Minnesota.

Mr. Harris: Couldn't get anything in Wisconsin. (Laughter.)

Mr. Philips: Don't say too much, young man. The outcome of offering that premium is to make the best show of any state in the union. It makes a magnificent show, and I cannot agree with my friend Dartt in his conclusions. That sweepstakes premium is all right. I have heard it intimated that horticulturists borrow freely of their neighbors. It gives a man license to work in things that he cannot raise himself. If Mr. Harris

was gathering fruit all over the state, and he was gathering fruit for this sweepstakes exhibit, when he came to make his own exhibit if he had found some Wealthys that were finer than his own he would put them in; I would be very likely to do it myself. (Laughter.)

In regard to these rigid rules, if you make one man live up to them, make every one live up to them, and there will be less criticism, and I would also advise my neighbors here to pray that they may not fall into temptation and steal their neighbors' apples. (Laughter.)

Mr. Dartt: As usual I am against the crowd, but I am right, and the crowd is wrong. (Laughter.) This sweepstakes exhibit is the biggest show you have got, and what is the use of bothering with those little individual exhibits? You make your sweepstakes large enough and divide it up so a big lot can get in, and you will have a big show. I am not going to try to argue this crowd out of their coveted object.

I don't believe I said anything as mean about Mr. Underwood as he said about me, but I want to say that he made the finest exhibit at our last state fair I ever saw in my life; I did not see anything nearly so fine at the World's Fair. I never saw anything to equal the exhibit of the Jewell Nursery Company, and if we can get exhibits like that without sweepstakes premiums I will go right in for them every time.

Mr. Harris: The man who makes such a sweepstakes exhibit is required to give the name of the variety, the name of the man who grew it, with his postoffice address, his own name and have a label of that kind on each plate. There were about forty men credited with the finest fruit there. It gives a man a pretty good opportunity to go there and see who raises the finest fruit in the state.

Mr. Wheaton: I agree with what has been said, for I have had a little experience in the agricultural department, having had charge for seven years. It is not right to have a rule requiring exhibits to be in place Saturday night, and then not have them ready until Monday night. It does not give a fair show to those that are on hand promptly, and I believe those rules should be lived up to more strictly than they are at the present time, and I do not see why they should not be lived up to in the horticultural department as well as in other departments.

Mr. Lord: I think the language of the premium list is sometimes a little obscure. There is a rule which says: "No fruit shall be duplicated." I supposed that was meant to cover the case Mr. Philips mentioned, in case some fruit was entered and then changed for something better before the committee came around. However the committee said that was not what was meant by that rule; it is said no fruit should be duplicated. I would like to have Mr. Underwood explain what that means.

Mr. Underwood: I should interpret it to mean that you should not have two plates of the same variety. I understand the word "duplicate" to mean in this case more than one plate of the same variety. I never had occasion to look up that point, but that would be my interpretation.

Mr. Lord: It seems to me the language might be changed so it would be a little more explicit, that no fruit should be duplicated; perhaps the case that Mr. Philips mentioned might be construed as coming under that rule. I think it means that no exhibitor shall exhibit the same variety of fruit for two premiums. That is, for instance, he can exhibit the best Wealthy for the first premium, but not for the second and third premiums

Mr. Underwood: I do not know that I understand Mr. Lord exactly. I understand the rule to mean that no single plate of apples shall be duplicated for the same premium. If it was for the best plate of Wealthys, for instance, they could not enter another plate for the same premium, but I do not understand that they could not enter Wealthys in another collection. It all hinges on the premium that is offered.

Mr. Harris: Mr. Latham has just come in and perhaps he can give us some light on the matter.

Mr. Latham: The rule means that no two plates of the same variety shall go into any one entry. For instance, you have an entry for a collection of apples and should you have two plates of Duchess (or two plates of any other variety) you could not put them both into this collection.

Mr. Lord: I think it would be a very good thing if the rule could be construed to apply to the case Mr. Philips mentioned.

SETTING TREES.

EDSON GAYLORD, NORA SPRINGS, IOWA.

Yes, set a tree on your lawn,
It will blossom when you're gone.

Different soils, varieties, conditions and locations all often have an important bearing on the future success of the tree you are setting. Setting a tree in a deep, rich soil where the ground has been recently plowed deep and cultivated thoroughly is a short and easy matter; a little scooping out just where the tree is to set, and you are ready to set. But the many trees that are and will be set are in old ground to fill vacancies or to add beauty to some sod-bound, grassy lawn. It is a common remark that it is little use to set new trees in places where others have failed. I have long been convinced there is less truth than poetry in this old saying. My experience and observation has convinced me that there need be no failure in setting trees in uncultivated fields or in grassy lawns. To make such a success one needs put on his thinking cap and study conditions necessary to success. First, dig the hole deep, and if an apple tree at least seven inches deeper than the tree stood in nursery, unless the soil is cold and heavy; in this case I set only three inches deeper and raise one inch when filled above the level. Evergreen trees and shrubs I set only two or three inches deeper. Our greatest failures come in digging post holes in hard ground to set trees or shrubs. A hole with perpendicular banks left solid is all wrong. No hole when ready to set either tree or shrub should be bounded on either side by hard banks, which is almost always the case in setting trees in old ground. No hole should be less than four to five feet broad. If an apple tree the hole should be (on the bottom) sloping to one o'clock. This will aid much in holding the tree in the right position to be self protecting from the sun. Then spread a half bushel of the richest dirt you can get handy and put under where the roots are to set; then pick up your tree, examine and cut off from the under side all injured roots, and you better clip some of the longer roots than to bend them too much. Do not put too much stress on retaining and preserving all the fine fibrous roots; they are often of little if any value. Place your hopes much more on the larger and stronger roots. The Germans have demonstrated this thoroughly, that the small fibrous roots that

we have formally held so valuable in setting trees are usless. There is one other point I deem important before setting any tree that has been started on tender roots. I examine close for the tender root at the bottom, which, as a rule, appears dark and dull. Then I cut off all the tender roots, unless it takes them all. This lets the tree down deeper and secures its own hardy roots. I have practiced this for years.

Next place your tree in position to make it self-protecting against sun scald, that many claim has killed half of our bearing apple trees. This is not a difficult matter if your tree is straight, but if its trunk has two or three slight crooks you will often find it very difficult to hold your breath long enough to determine just which way to turn it so as to best prevent the dreaded sun killing. The stem and principal branches should all point as near to one o'clock as possible—by no means vary over a half hour either to the right or to the left. The instructions commonly given by our best writers to set to the southwest is dangerous in the extreme, as I have demonstrated over and over. Never set either to the southeast or southwest, but just a little to the west of south. As soon as you have determined on the exact position to have the tree stand, have two inches of the rich earth thrown over the roots and then get up and stamp the earth thoroughly down, not only over the roots but over the bottom of the hole and particularly against the sides of the hole. Then if I have any sides or upright banks anywhere on either side I take a spade or grub hoe and slash down the bank on all sides stamping thoroughly at the same time till I get the entire hole within three inches of level; then hold your breath again and fill the hole even. If dry, leave a little sloping to the tree, but see that you fill this last three inches with as fine and as loose earth as possible, and fine manure on top of this will be all the better—but never round it up about the base of the tree, never.

To ensure a successful growth the first season (and you want it then if ever), you must do one thing with care: Cultivate the three inches of surface thoroughly and keep the ground fine, light, and smooth in August—and if the soil is still dry keep up a thorough cultivation through August; if still very dry keep on till it freezes up, when the frozen surface will shut out the wind and the sun, and the roots will soon be supplied with moisture by capillary attraction from many feet below. I take very little stock in this cry of fall watering trees by some of our wise teachers who ought to know better—just before the ground freezes they advise watering—but follow my suggestions and rake the surface with a steel garden rake about every ten days, and, I care not how dry it may be, on good soil you need no water. If you are close over rock, heavy blue clay or hard pan then water often or better run and halloo fire or murder. Another point not to be overlooked: if you rake or cultivate the surface thoroughly today, and it rains a fine shower tonight, and the ground is in need of more moisture, as soon as the surface dries a little go over it again with the rake in a few hours, and you hold nearly all the shower, but if you let it go a number of days you lose nearly all the shower you thought to save.

Now while your tree is set, there is another fine point for serious consideration. Setting trees, in spite of all you can or have done, will often show when set openings on the sun side, and if not closed up before it comes in bearing the tree will be injured, often ruined. This by a very little care can be easily avoided. Soon after I set my trees I step to the sun side, and if I

find an opening I catch each twig that is near the opening and find the bud that points the most directly towards the opening and cut each twig off just above such bud. I go all around the opening and if the opening is likely to prove serious I go over the same the next spring. One will be surprised to see how rapidly he can close these openings. To aid this work and insure a tree's self protection, as soon as the tree is set I cut off smooth to the trunk all limbs or shoots that appear to be growing to the northeast, which forces the sap into the branches on the sun side and builds it up in a way to make it safe from sun scald, which is death to many trees sooner or later unless aided by some kind of protection. Then clip the twigs on the sun side to thicken the top on the sun side, but never head in, as is often recommended, on the northeast side to make the sap build up the sunny side; if you do you will fail, for every twig you head in will immediately send out two shoots in place of the one headed in. Always cut close to the stem all limbs or shoots that appear growing to the northeast. Heading in on the northeast side, as often advised, only adds fuel to fire or insult to injury; but cutting all the shoots from the northeast side close to the stem forces the sap to build up the sunny side. Follow this training till the tree comes in bearing, when from some cause (not fully known to me) the tree ceases its former inclination to grow to the northeast. This one-sided training is often objected to, but here I deem it of very great importance.

When once in fashion nothing to me appears nearer perfection than to see a fine young orchard with every tree standing to the one o'clock sun, with all openings closed up on the sun side, with a slight opening on the northeast corner which furnishes a much needed place to get into each tree in time of picking, trimming or hunting worms.

Boys ask why I advise stamping the earth so firm when refilling the hole in setting a tree. I do this to connect the loose earth thrown back solid against the bottom and sides. If the earth is left light and loose on the sides and bottom I get little or no benefit from the moisture that would otherwise rise in a dry time from below by capillary attraction. I have removed trees after being set two or three weeks in a dry time, and where loosely set I have found the earth on the bottom and sides of the hole much more moist than the earth that had been replaced in the hole in setting. This securing special aid from capillary attraction in a severe drought is, as a rule, little thought of, but it is an unseen power of inestimable value to all new set trees here in our long continued seasons of drought. Were it not for this aid our entire forest would scarcely survive one season here, in our dry, hot air. If these be facts, we need not argue the vast importance of securing the most perfect capillary attraction. To secure the best results there appears two important ends to be gained. First, how to raise the moisture from the earth below and not have it stop just as it reaches the bottom roots but keep on till above all roots; but here comes the second fine point, how to stop it and hold it just below the surface and among the roots. Satan never worked with any more persistency to induce Eve to eat the forbidden fruit than does both the sun and wind to induce the moisture to break out from the surface and escape from the roots to the atmosphere. The best known remedy I can give is to keep the surface loose from setting till rains in the fall.

ADULTERATION OF EXTRACTED HONEY, AND HOW CAN IT BE PREVENTED?

EUGENE SECOR, FOREST CITY, IA.

This is an age of shoddy and deceit. Competition in business has become so sharp, and the profits so meager, the temptation is to cheapen the article in order to cut the price of honest goods. And the blame is not altogether on the shoulders of the seller. The ambition to ape one's neighbors when one hasn't the means to do it is at the bottom of a good deal of this cheap-John business. It leads one to buy the counterfeit at a lower figure in order to appear as well-to-do as some one else with more wealth.

When the price of an article is the chief inducement to purchase, it is not to be wondered at that the merchant and manufacturer should try to make the price right by substituting an inferior article. If they can make it look just as nice as a better quality of goods they satisfy, in some degree, the almost universal desire to get something for nothing or to appear to be what we are not.

The purchaser wants cheap goods because he isn't honest, because he wants the producer's and dealer's legitimate profits, or he wants to pass as a wealthier man than he really is; and the manufacturer and merchant supply the cheap counterfeit goods because they are not honest, for they rarely admit the truth of the fraud practiced.

There is no denying the fact of the widespread adulteration of foods, medicines and condiments. Matters that affect the health of a community are of vital importance; and since it is the province of law to compel people to do right, or at least to be honest in their dealings with others, the necessity is plain that some adequate measures ought to be enacted to protect the health of the innocent public. While I admit that some people ought to and do know better than they practice in buying, there are thousands too young to protect themselves from the wiles of modern trade.

The present age has not gotten beyond the need of the ten commandments, but the decalogue might be modernized by the additional injunction: Thou shalt not fool thy neighbor's stomach.

Buckwheat flour three-fourths wheat or rye middlings—or something worse; maple syrup as innocent of maple as the moon is of the weather; so-called butter from Armour's packing houses, and liquid honey from the fruitful cornfields of Iowa or Illinois, are only samples of the nefarious practices in vogue to deceive a confiding public.

No matter whether all these food frauds are injurious to health or not, we have a right to demand that things be called by their right names. If I am blind and ask for a violin, no man has a right to take my money and deliver me a corn-stalk fiddle; and if my palate craves butter and honey I am defrauded if I get a mixture of lard and cotton seed oil for the one or pure glucose for the other.

Legislators have long recognized the need of pure food laws, but they are slow to vitalize the enactments with proper methods of enforcement. Laws never did and never will enforce themselves. Every law which is of public benefit ought to have a public officer whose duty it is to enforce it. The state not only has the right, but it is the state's duty to protect its people. It asserts this right in the attempt to prevent the spread of contagious diseases, and the duty of looking after such matters is not left to

individual effort or interest but is placed on public officials who are supposed to regard the interests of the whole community.

In many states the laws against adulteration are good enough, but they lack the vitality of a public prosecutor whose official duty it is to enforce them. What, think you, would the law against oleomargarine and butterine amount to if left to individual and isolated effort to enforce it? I am sure it would be violated every day in the year. But where a dairy commissioner is on the alert, backed by a live dairy association, the state of affairs is quite different. The laws against the adulteration of all foods, medicines and drugs ought to be enforced in the same manner, through a food commissioner, who, if efficient and honest, can drive adulteration out of the market.

If any one prefers to buy oleo for butter, or glucose for honey, he should be permitted to do so, for I believe in the largest liberty of the citizen consistent with the public good; but every article put upon the market for food or medicine should be branded truthfully, and any misbranding or misrepresentation ought to be made a crime and punished accordingly.

No legitimate industry can live against the competition of fraud and deceit, and I am sure you will agree with me that honey can not be produced and sold at a profit in competition with glucose, if the latter is permitted to sail under the flag of "Pure White Clover Honey." Glucose is a legitimate article of commerce, and if it is healthful as claimed, why can't it stand on its own merits? Why must it be labeled what it is not? Why be palmed off for some higher priced luxury, with which it can never compete except under an assumed name

I know of no way to successfully combat the evil tendencies of modern trade in the direction of adulteration and misbranding, than for all organizations interested in the purity of foods, medicines or beverages to unite in the demand for proper remedial state legislation and to urge also upon congress the passage of a bill regulating the interstate feature of commerce protecting states which have adequate pure food laws from being flooded, under the original package idea, with adulterated goods from the outside.

The United States Bee-Keepers' Association has stood and will stand for the enactment of such measures as shall place all food interests on an equal footing. No one interested party can bring the necessary pressure to bear upon congress, but where all organizations that prefer honesty to deceit unite there can be no such word as fail. No manufacturers' association dare go before a legislative body or committee and object to the branding of any article designed for human consumption other than in a truthful manner.

The National Association of Bee-Keepers, after having given the matter of adulterations a good deal of study, recommends the passage, by congress, of the Brosius Bill, H. R. 12,190, introduced February 27, 1899, and it urges upon all bee-keepers the importance of active co-operation. A word to your congressman asking his support of this meritorious measure will do good. This act covers the inter-state feature.

You appear to have adequate state legislation and supervision in Minnesota, and if the enforcement of pure food laws is difficult or impracticable here, I apprehend it is for the want of proper national enactments to supplement your own efforts.

I hope you will unite your efforts with ours, and aid in the passage of the above named measure, and then take an active interest in urging and assisting your dairy and food commissioner to enforce the law.

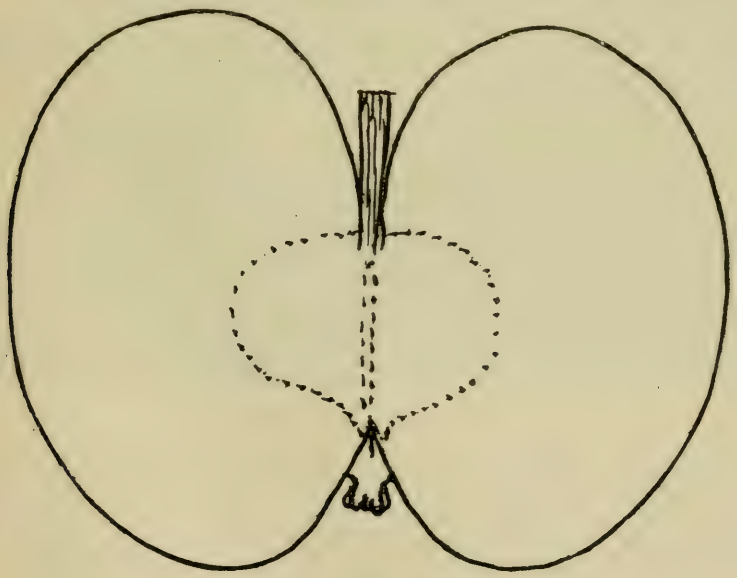
We are surely behind many countries in this matter of inspecting and regulating food products. There is such a thing as abusing liberty. I hope the time may soon come when equal rights shall be so sacred that no one shall dare to deceive his neighbor.

THE MILWAUKEE APPLE.

J. S. HARRIS, LA CRESCENT.

Replying to the query of Clarence Wedge, in April "Minnesota Horticulturist," will say that I do not think that it has been fruited in this state. Nursery trees that were two years old in the nursery came through the winter of '98 and '99 without injury or more discoloration than the Duchess of Oldenburg.

The variety had its origin from seed of the Duchess of Oldenburg, planted by George Jeffry, at Milwaukee, Wis. He writes that the tree is



MILWAUKEE APPLE.

very hardy and productive, and that the fruit keeps well until after mid-winter. It was propagated at Nursery, Ill., by the late John V. Cotta, and I think that he rated it about with the Patten's Greening for hardiness.

The following is a description of a specimen from the original tree, made Oct. 11, 1898: Size 8; weight 9½ oz.; form, round oblate, slightly angular; color, greenish yellow and brownish red striped; stalk, short and rather stout, set in a broad, deep, funnel shaped cavity, russeted at the bottom; calyx open, in a deep, abrupt, nearly smooth basin. The flesh is about half fine, tender and juicy; flavor, a pleasant acid; use, cooking; core, small and closed; season, early winter; tree, fairly vigorous grower.

DARTT'S PARK AT OWATONNA.

A new institution has been added to the list of Owatonna's attractions. On the banks of Maple Creek, at a point some distance above the Mineral Springs avenue bridge, has been laid out a park-like resort, which a considerable number of both young and old persons may be found enjoying on any pleasant day. This place is called by the unpretentious name of "Dartt's Park." It is located on property owned by E. H. S. Dartt, and the improvements and conveniences of the resort have been provided by Mr. Dartt.

A VIEW IN DARTT'S PARK.

Mr. Dartt has constructed two dams in the creek, which at one place maintain the water at such a depth as to make a pleasant and safe place for bathing and swimming. On the banks near this "swimming hole" he has erected two enclosures to serve as bath houses, one for each sex. From within them daily come forth lads and lasses attired in various sorts of bathing suits, and disport in the waters of what has been jokingly named "Lake Dartt." Mr. Dartt has also provided rafts and foot bridges, and the place is reached by a roadway over the upper dam. There are also a shed in which to tie horses, and a well, sixty-nine feet deep, which supplies excellent water. Benches and tables for picnic parties stand about the grounds.

The plot at present includes about thirty acres of land. Mr. Dartt is planning to build another dam lower down, which will give the park a still larger water area. He has other improvements also in mind, among them some to be made on the bath-houses, which are at present in a crude condition, though they serve the purpose well, and no one complains.

Your Corner.

While I have not examined things very closely, everything so far indicates that we shall have a good fruit crop in this section.—J. P. Andrews, Faribault, April 19, 1900.

In regard to the fruit prospect, I think it is first rate. Everything seems to be loaded with fruit-buds, and if no bad frosts or blighting winds or anything else happens we will have a fruit crop.—C. E. Older, Luverne, April 16, 1900.

The outlook for a fruit crop is very promising. The apple trees are sound in top and roots and are full of blossom buds. Plums and cherries look well. The raspberries and strawberries wintered well, whether they were protected or not.—Frank Yahnke, Winona, April 17.

Owatonna is doing a smashing business. One nurseryman packed two big car loads of trees yesterday, about the same amount the day before, and will repeat today. Two other nursery firms are doing a similar amount of business. If you beat Owatonna in serving the Lord or serving the devil you must hustle early and late.—E. H. S. Dartt, April 19.

Apple and plum trees are full of fruit buds, and prospects at this writing are good for a full crop. Raspberries not covered are injured, but where they were covered they are in fine condition. Strawberries where mulched are looking well and promise a good crop. Young apple trees in nursery row are injured to some extent, but not killed.—W. E. Fryer, Mantorville, April 17, 1900.

Apple fruit buds are now swelling, and there is an unusually large quantity on the trees. Prospect is for a large crop of apples. Strawberries wintered good in spite of the fact that there was no snow until the latter part of March. Raspberries winter-killed more than common. I expect there has been the usual amount of root-killing of fruit trees in young orchards. Buffalo berry in bloom.—Dewain Cook, Windom, April 20, 1900.

The prospect for a good crop of fruit in my orchard is very encouraging and very promising; the fruit buds on apple, plum and cherry are very prominent and in good condition. Everything has come through the winter in excellent shape. All of last year's planting looks very good. Am going to plant about 200 fruit trees.—E. W. Mayman, Sauk Rapids, Minn., April 19, 1900.

The fruit trees, bushes and plants on my farm have come through the winter in excellent condition with promise of an abundant harvest. Our plum orchard, the pride of the farm, is looking exceptionally well and is full of fruit buds, regardless of the heavy crop it bore last season. I find no injury to the apple trees in root or branch. They, too, are full of fruit spurs, especially the Wealthy, in my young orchard. No injury from mice where the trees were banked. Our small fruits appear to be all right. —A. K. Bush, Dover, April 17.

I have visited several orchards, both apple and plum, and found them coming out of winter in splendid condition and set very full of fruit-buds.

Currants and gooseberries will bloom very full; can't say as to raspberries and strawberries, as they are yet in winter quarters, also grapes. I have Seek-no-further, Jonathan, Grime's Golden, Minkler, Northwestern Greening, Ben Davis, all top-worked, that are full of fruit-buds and perfect in every way; and Gakovaska pear on Tetofsky that every bud to all appearance is perfect. I found in an orchard near here Baldwin and Rhode Island Greening, grafted onto Virginia crab two years ago, that are set full of fruit-buds. Every orchard that I have visited that has had proper care and attention is in perfect condition. I find in nine cases out of ten, it is the owner that winter-kills.—J. C. Hawkins, Austin, Minn., April 19, 1900.

I have taken some time to look over the situation and discover that all fruit trees that were not seriously injured the previous winter have come through the past one in good condition and are well supplied with fruit-buds, and present indications point toward a reasonably good crop of apples, plums and cherries. While grapes had not quite recovered their normal vigor after the injury of 1898-99, they have wintered well, and those even that were not given protection are uninjured. Without later unfavorable conditions the crop will be an average one. Raspberries have suffered more here than the other fruits. The injury appears to have occurred with the first frost in the fall, which caught them with a new growth started. Present indications point to little more than a half crop. Strawberries have generally wintered well, but the crop of this vicinity is not expected to be more than two-thirds of that of last year, owing to the damage done to the new plantations by the floods of last June and the drouth of late summer causing a scant rooting of plants.

We had too much snow during the winter, the last of the drifts disappeared yesterday, and we have just had thirty hours of rain. The soil is so wet that we have not yet been able to start in on spring work.—J. S. Harris, La Crescent, April 17.

Secretary's Corner.

T. T. Lyon, South Haven, Michigan, died in February, 87 years old. No Michigan horticulturist stood higher, or has been more useful in his day and generation.

A Triple Jointed Meeting.—It is interesting to note a joint meeting of the state horticultural societies of Arkansas, Oklahoma and Texas, at the Texas Agricultural College Station, July 3, 4, 5 and 6. A four days' session in the summer! This must be the dullest season for fruit growers in that region. Is there a hint in this for us?

List of Those Sending New Members in April.—

Rolla Stubbs, 1.	J. P. Andrews, 4.
C. E. Older, 3.	Rev. R. Vallquist, 4.
T. T. Bacheller, 1.	E. H. S. Dartt, 2.
John Zellar, 1.	C. R. Johnson, 1.

To Applicants for Premiums.—The plant premiums have now been sent out, and it is too late to make further applications for this spring. Those coming in from now on will be held for delivery in the spring of 1901.

A Minnesota Botanical Society.—Such an association was formed early this month by the botanists of the state, in convention assembled at the state university. We notice among the first list of members the names of several familiar to us as workers in the horticultural society. We extend to this new organization most cordial greeting.

Resignation of Prof. H. W. Brewster.—After twelve years service with the Minnesota Agricultural School, Prof. Brewster has severed his connection therewith, with great regret on the part of the management and all others interested. Ill health in the family made a change necessary. As a friend, fellow member and co-worker, he will carry with him the sympathy and best wishes of the members of our organization.

Stringfellow Plants Trees in the Sod.—Many of our readers are familiar with Mr. Stringfellow's hobby of planting trees without the usual lateral roots or preparation of the soil He has just planted, to demonstrate his theory, an orchard of 3,000 fruit trees in the tough sod of a Texas prairie by shoving down into an inch and a half hole the main root of the tree, with the side roots all removed. This is a heroic test of his theory, and should go far to settle the point in dispute between him and other southern fruit growers, who stick to the good old way.

Minnesota Fruit Crop in 1900.—The outlook for the fruit crop, as it appears to our contributors in the "Your Corner" of this number, is most encouraging, as far as can be judged by present appearances—at least above ground. Few of these writers speak of the condition of the roots, and there is liable to be some trouble from this cause after this very open winter. Some of the grape growers at Minnetonka have found many frozen roots in their vineyards and fear considerable injury. Safety from this danger lies along the line of mulching with some suitable material. Perhaps the dust mulch would be enough ordinarily.

Bulletin on San Jose Scale.—The Ontario Department of Agriculture (Toronto, Canada) has just issued a very comprehensive bulletin on the above subject, treating also of other scale insects. After giving a very complete illustrated life history of the insect, it details the various methods of controlling and exterminating it with results. Without expecting to eradicate it, it is evidently the belief of the writer that it can be held in check by proper inspection and fumigation of nursery stock, destruction of badly infested stock and orchard trees and spraying with kerosene and water emulsion (one part of oil to four of water) and other preparations.

Another "Horticultural Hand Book."—Prof. J. L. Budd, the well known horticulturist and for many years, until recently, in charge of the horticultural department of the Iowa Agricultural College and State Experiment Station, is the author of this new book. The work is not to be considered as a consecutive treatise, either upon general horticulture or any branch of the subject, but, rather as a gathering together of practical thoughts on the general subject covering a wide range, probably the result of his own observation

and experience in the northwest. Some attention is given to the subject of propagation and top-working, orchard management, varieties of fruits adapted to the northwest, etc. The ornamental is not overlooked, as the book begins with a chapter on home grounds and farther along shrubs and flowering plants receive some attention, as also the subject of nut growing. A chapter on hybridizing and crossing, with practical directions to guide the novice, will be found especially valuable. The book lacks an index and table of contents, which will not be noticed so much, however, as in a volume of larger size. It contains 160 small sized pages of coarse type and is issued by the Wallace Publishing Co., Des Moines, Ia., as one of their Farm Library Series. Price, 35 cents.

PROF. S. B. GREEN GOES TO EUROPE.—Accompanied by his wife, Prof. Green, well known to all our readers as now for ten years having been at the head of the horticultural department of the Minnesota Agricultural College and State Experiment Station, is about to leave for Europe for a trip to cover the entire summer. The primary object of this journey is to study the horticultural conditions of the old world and gather such things as he can find that will be of assistance to him in prosecuting his work with us here in the northwest. With a training of six years in the horticultural schools of Massachusetts, of ten years in the field with some of the best nurserymen and experimenters in the east, and now twelve years as teacher and experimenter in our own state, the professor carries with him a training and experience admirably fitting him for the work he is about to undertake. We shall hear from him occasionally while abroad, and our readers will have opportunity to share liberally in whatever good results he attains.

They sail from New York May 8th on the steamer Kaiser Wilhelm der Grosse, expecting to be at home again before September 1st.

HINTS TO EXHIBITORS AT THE STATE FAIR.—In this issue is published a copy of the regulations of the horticultural department of the next Minnesota state fair and two articles pertaining to the exhibition of fruits in that department. Intending exhibitors at the coming fair are urged to give all those articles very careful reading. The rules should be carefully studied as never before, as it is the intention of the management to enforce them strictly. There is nothing in them with which exhibitors cannot easily comply if they become once familiar with them, and their close enforcement will add greatly to the attractiveness of the fair and the convenience of all concerned. The articles by Prof. Green, for many years judge of apples, and by Mr. Clarence Wedge, one of our most successful exhibitors, are full of valuable practical suggestions that can easily be put into use. Shall we all work together to make this the best fair, in the truest sense, Minnesota has ever seen?

We are pained to announce the death of Miss Sarah M. Manning, for many years an honorary life member of this society, which occurred at her home in Lake City, Minn., Saturday, April 7th. She had been gradually failing for some time, and her death was not unexpected. A suitable biography will appear in an early number.

E. B. JORDAN,

LATE OF NORTH ONTARIO, CALIFORNIA.

[See biography.]

THE MINNESOTA
HORTICULTURIST.

VOL. 28. JUNE, 1900. No. 6.

In Memoriam.

EUGENE B. JORDAN,

ONTARIO, CALIFORNIA.

Died March 10, 1900, aged 62 years.

(See Frontispiece.)

Of the early life of Mr. E. B. Jordan little is known to the writer beyond the fact that he graduated from Beloit College, Wisconsin. He removed to Rochester, Minn., in 1865, and the following year engaged in the nursery and fruit business on the place now occupied by Mr. R. C. Keel, on the hills two miles east of Rochester. With great faith in the future of fruit growing in his adopted state he proceeded to plant large orchards on the hill sides of his farm, which intelligent care soon brought into profitable bearing. The exact figures as to the size of these orchards are not at this moment available, but they covered a large portion of the farm and were greater in extent than any similar plantings at that time, and perhaps they have not yet been surpassed in our state.

Mr. Jordan was a man of great energy, with large ideas, and the force and system needed to carry them out successfully. As such he impressed himself very forcefully upon the horticulture of the state during the eighteen years he remained in Minnesota. Upon the organization of this society he allied himself with it, his name appearing on the rolls first in the year 1868, its third year. From that time on to 1887 he was almost continuously a member and one of the most active of its workers, as becomes at once apparent in looking through the reports covering the intervening years.

An increasing interest in horticultural pursuits in 1887 took him out of the state to Florida, where he remained some years growing and shipping orange trees in great quantities to California, until at length he removed to southern California, still continuing in the nursery business.

His business operations proving successful financially he was enabled to retire from active work some years since and care for his declining health.

After eight years of invalidism he closed a useful life March 10, 1900, leaving behind him a wife, one son and two daughters, who all live in the near vicinity.

There are many others to recall his excellent qualities and mourn his loss.

FRUITS AND FLOWERS IN THE PREMIUM LIST, MINNESOTA STATE FAIR, 1900.

(For rules see May Horticulturist.)

CLASS 62—APPLES.

Open to all.

Lot.		1st Prem.	2nd Prem.	3rd Prem.
1.	Sweepstakes collection. Open to all competitors and subject to all the foregoing rules, with the following modifications: 1st. The fruit need not have been grown by the exhibitor. 2nd. The collection may include any variety, seedling or otherwise, grown in Minnesota. 3rd. Each plate shown must be plainly labeled with the name of its grower. Printed cards for this purpose will be furnished on application to the superintendent	$25.00	15.00	10.00

John W. Thomas & Co.'s Special Sweepstakes Premium $100.00

John W. Thomas & Co., dry goods merchants, 500-506 Nicollet avenue, Minneapolis, offer $100.00, as a special sweepstakes premium, to be prorated, according to merit, among all competitors in the above competition (Class 62, Lot 1.).

No.		1st Prem.	2nd Prem.	3rd Prem.
2.	Peck of Wealthy apples	$5.00	$3.00	$2.00
3.	Collection of 10 varieties of apples, to be judged with special reference to the size, beauty and perfection of the fruit (crabs and hybrids excepted). Premium	$25.00		

To be divided pro rata among all the exhibitors in this lot.

CLASS 63.—APPLES. For Professionals.

Lot		1st. Prem.	2nd Prem.	3rd Prem.	4th Prem.	5th. Prem.
4.	Collection, hybrids and crabs excepted	$25.00	20.00	15.00	10.00	5.00
5.	Collection of hybrids and crabs, not to exceed 10 varieties	5.00	4.00	3.00	2.00	1.00

SINGLE PLATES.

Lot.		1st Prem.	2nd Prem.	3rd Prem.
6.	Antinovka	$1.00	.75	.50
7.	Anisim	1.00	.75	.50
8.	Long Arcade	1.00	.75	.50
9.	Blushed Colville	1.00	.75	.50
10.	Brett	1.00	.75	.50
11.	Breskovka	1.00	.75	.50
12.	Ben Davis	1.00	.75	.50
13.	Charlamoff, Peterson's	1.00	.75	.50
14.	Christmas	1.00	.75	.50
15.	Cross	1.00	.75	.50
16.	Fameuse	1.00	.75	.50
17.	Gilbert	1.00	.75	.50
18.	Grundy	1.00	.75	.50

Lot.		1st Prem.	2nd Prem.	3rd Prem.
19.	Harding	1.00	.75	.50
20.	Humboldt	1.00	.75	.50
21.	Haas	1.00	.75	.50
22.	Judson	1.00	.75	.50
23.	Kaump	1.00	.75	.50
24.	Longfield	1.00	.75	.50
25.	Lubsk Queen	1.00	.75	.50
26.	Lowland Raspberry	1.00	.75	.50
27.	Maple	1.00	.75	.50
28.	McMahon White	1.00	.75	.50
29.	Malinda	1.00	.75	.50
30.	Northwestern Greening	1.00	.75	.50
32.	Ostrekoff (true)	1.00	.75	.50
34.	Peach	1.00	.75	.50
35.	Peerless	1.00	.75	.50
36.	Phebe	1.00	.75	.50
37.	Peter	1.00	.75	.50
38.	Repka Malenka	1.00	.75	.50
39.	Rollin's Prolific	1.00	.75	.50
40.	Sandy Glass	1.00	.75	.50
41.	Tama	1.00	.75	.50
42.	Talman Sweet	1.00	.75	.50
43.	Tetofsky	1.00	.75	.50
44.	Utter	1.00	.75	.50
45.	Walbridge	1.00	.75	.50
46.	Wolf River	1.00	.75	.50
47.	White Pigeon	1.00	.75	.50
48.	Yellow Sweet	1.00	.75	.50
49.	Yellow Transparent	1.00	.75	.50

Lot		1st Prem.	2nd Prem.	3rd Prem.	4th Prem.	5th Prem.	6th Prem.
50.	Duchess of Oldenburg	$1.75	1.50	1.25	1.00	.75	.50
51.	Hibernal	1.75	1.50	1.25	1.00	.75	.50
52.	Okabena	1.75	1.50	1.25	1.00	.75	.50
53.	Patten's Greening	1.75	1.50	1.25	1.00	.75	.50
54.	Wealthy	1.75	1.50	1.25	1.00	.75	.50

CLASS 64.—APPLES. For Amateurs.

(An amateur is one engaged in a pursuit not as a business.)

Lot.		1st Prem.	2nd Prem.	3rd Prem.	4th Prem.	5th Prem.
55.	Collection, hybrids and crabs excepted	$15.00	10.00	8.00	4.00	2.00
56.	Collection of hybrids and crabs not to exceed 10 varieties	5.00	4.00	3.00	2.00	1.00

SINGLE PLATES.

(Same as list of single plates in Class 63.)

CLASS 65.—CRABS AND HYBRIDS. Open to All.

Lot.		1st Prem.	2nd Prem.	3rd Prem.
106.	Briar's Sweet	1.00	.75	.50
107.	Dartt	1.00	.75	.50
108.	Early Strawberry	1.00	.75	.50
109.	Florence	1.00	.75	.50

Lot.		1st Prem.	2nd Prem.	3rd Prem.
110.	Gideon's No. 6	1.00	.75	.50
111.	Greenwood	1.00	.75	.50
112.	Hyslop	1.00	.75	.50
113.	Lyman's Prolific	1.00	.75	.50
114.	Martha	1.00	.75	.50
115.	Pride of Minneapolis	1.00	.75	.50
116.	Sweet Russet	1.00	.75	.50
117.	Tonka	1.00	.75	.50
118.	Transcendant	1.00	.75	.50
119.	Virginia	1.00	.75	.50
120.	Whitney	1.20	.75	.50

SEEDLING APPLES. Open to all.

121.	Collection, excluding crabs and hybrids	$8.00	6.00	4.00
122.	Collection of crabs and hybrids	6.00	4.00	2.00

A sample of wood, three years old, from the tree bearing the fruit exhibited must accompany the exhibit in the three lots following, and hardiness of tree, as appearing in this sample, shall be considered by the judges.

Lot		1st Prem.	2nd Prem.	3rd Prem.
123.	Fall variety, not sweet, never having received a premium at the Minnesota State Fair	$6.00	4.00	2.00
124.	Winter variety, not sweet, never having received a premium at the Minnesota State Fair. Before premiums are paid in this lot exhibits of the same varieties must again be examined and found in good condition (by the same committee, if possible), at the next winter meeting of the Minnesota State Horticultural Society; the apples not having been kept in cold storage	10.00	8.00	2.00
125.	Sweet variety, never having received a premium at the Minnesota State Fair; of such excellent quality as to make it worthy of general cultivation; either fall or winter	6.00	4.00	2.00

CLASS 66.—GRAPES. Open to All.

Must be placed on exhibition by 9 a. m. Tuesday, the second day of the fair.

Lot		1st Prem.	2nd Prem.	3rd Prem.	4th Prem.	5th Prem.
126.	Collection	$20.00	15.00	10.00	8.00	5.00

Lot		1st Prem.	2nd Prem.	3rd Prem.
127.	Agawam (Roger's No. 15)	$1.50	1.00	.50
128.	Aminia (Roger's No. 39)	1.50	1.50	.50
129.	Barry (Roger's No. 43)	1.50	1.00	.50
130.	Brighton	1.50	1.00	.50
131.	Concord	1.50	1.00	.50
132.	Cottage	1.50	1.00	.50
133.	Campbell's Early	1.50	1.00	.50
134.	Delaware	1.50	1.00	.50
135.	Duchess	1.50	1.00	.50
136.	Early Victor	1.50	1.00	.50
137.	Eldorado	1.50	1.00	.50
138.	Empire State	1.50	1.00	.50
139.	Green Mountain	1.50	1.00	.50
140.	Herbert (Roger's No. 44)	1.50	1.00	.50

Lot.		1st Prem.	2nd Prem.	3rd Prem.
141.	Iona	1.50	1.00	.50
142.	Janesville	1.50	1.00	.50
143.	Lindley (Roger's No. 9)	1.50	1.00	.50
144.	Lady	1.50	1.00	.50
145.	Martha	1.50	1.00	.50
146.	Massasoit (Roger's No. 3)	1.50	1.00	.50
147.	Moore's Diamond	1.50	1.00	.50
148.	Moore's Early	1.50	1.00	.50
149.	Niagara	1.50	1.00	.50
150.	Pocklington	1.50	1.00	.50
151.	Pokeepsie Red	1.50	1.00	.50
152.	Telegraph	1.50	1.00	.50
153.	Wilder (Roger's No. 4)	1.50	1.00	.50
154.	Woodruff Red	1.50	1.00	.50
155.	Worden	1.50	1.00	.50
156.	Wyoming Red	1.50	1.00	.50

SEEDLING GRAPES.

157.	Single variety	1.50	1.00	.50

CLASS 67.—PLUMS. Open to All.

Lot 158. Sweepstakes collection. Open to all competitors and subject to all the foregoing rules, with the following modifications: First, the fruit need not have been grown by the exhibitor; second, the collection may include any variety, seedling or otherwise, grown in Minnesota; third, each plate shown must be plainly labeled with the name and address of its grower. Printed cards for this purpose will be furnished on application to the superintendent. $50.00—to be divided pro rata among all exhibitors in this lot.

Lot		1st Prem.	2nd Prem.	3rd Prem.
159.	Collection (not to exceed 15 varieties) in uniform one-pint glass jars. To be accompanied by a statement of the method used in putting them up	$10.00	8.00	6.00

The following recipes may be used: For the thick-skinned varieties: 2 per cent formaline and 10 per cent alcohol, 88 per cent distilled water. The thinner the skins, the more alcohol should be used.

Another: Fill jar with plums and fresh water, and to one pint of water add one-half teaspoonful of salicylic acid.

Lot		1st Prem.	2nd Prem.	3rd Prem.	4th Prem.
160.	Collection, not to exceed 15 varieties (not in glass; fruit of early ripening varieties may be kept in cold storage)	$5.00	4.00	3.00	2.00
161.	Aitkin	1.00	.75	.50	
162.	Black Hawk	1.00	.75	.50	
163.	Cheney	1.00	.75	.50	
164.	DeSoto	1.00	.75	.50	
165.	Forest Garden	1.00	.75	.50	
166.	Hawkeye	1.00	.75	.50	
167.	Mankato	1.00	.75	.50	
168.	New Ulm	1.00	.75	.50	
169.	Ocheeda	1.00	.75	.50	
170.	Rockford	1.00	.75	.50	
171.	Rollingstone	1.00	.75	.50	
172.	Stoddard	1.00	.75	.50	

		1st Prem.	2nd Prem.	3rd Prem.	4th Prem.
173.	Surprise	1.00	.75	.50	
174.	Weaver	1.00	.75	.50	
175.	Wolf	1.00	.75	.50	
176.	Wyant	1.00	.75	.50	
177.	Windom	1.00	.75	.50	
178.	Seedling, to equal or excel the De Soto plum, never having received a premium at the Minnesota State Fair	5.00	3.00	2.00	
179.	Pears	2.00	1.00		
180.	Peaches	2.00	1.00		

CLASS 68.—SUNDRIES.

Lot		1st Prem.	2nd Prem.	3rd Prem.
181.	Ancient Briton blackberries	1.00	.75	.50
182.	Snyder blackberries	1.00	.75	.50
183.	Badger blackberries	1.00	.75	.50
184.	Sand cherries or sand cherry hybrids	2.00	1.00	.50

CLASS 69.—FLOWERS.

For Professionals.

PLANTS.

All plants must have been grown by the exhibitor at least three months, except in the case of imported plants exhibited in the United States for the first time.

Lot		1st Prem.	2nd Prem.	3rd Prem.	4th Prem.	5th Prem.
185.	Collection of foliage and decorative plants	$35.00	30.00	20.00	15.00	10.00
186.	Collection of greenhouse plants	20.00	15.00	10.00	5.00	
187.	Collection of climbing vines.	2.00	1.00	.50		
188.	Collection of five hanging baskets, one of a kind	4.00	3.00	2.00	1.00	
189.	Collection of coleus	2.00	1.00	.50		
190.	Collection of tuberous-rooted begonias	4.00	3.00	2.00		
191.	Single specimen palm	4.00	3.00	2.00	1.00	
192.	Collection of geraniums in bloom	4.00	3.00	2.00	1.00	
193.	Collection of carnations in bloom	3.00	2.00	1.00		
194.	Vase filled with plants at fountain in Horticultural Hall	4.00	3.00	2.00	1.00	

CUT FLOWERS.

To be placed on exhibition Tuesday morning, the second day of the fair.

Lot		1st Prem.	2nd Prem.	3rd Prem.
195.	Collection of asters	3.00	2.00	1.00
196.	Collection of carnations	3.00	2.00	1.00
197.	Collection of roses	3.00	2.00	1.00
198.	Collection of petunias	2.00	1.00	.50

BASKETS AND BOUQUETS.

To be placed on exhibition Tuesday morning, the second day of the fair.

Lot		1st Prem.	2nd Prem.	3rd Prem.	4th Prem.
199.	Floral design, Gates Ajar, 30-inch...	15.00	10.00	6.00	4.00
200.	Twelve-inch basket of flowers.....	5.00	3.00	2.00	1.00
201.	Pyramid bouquet	3.00	2.00	1.00	.50
202.	Hand bouquet, nine inches across....	3.00	2.00	1.00	.50
203.	Bridal bouquet, white flowers	3.00	2.00	1.00	.50

CLASS 70—FLOWERS.

For Amateurs.

PLANTS.

Lot		1st Prem.	2nd Prem.	3rd Prem.
204.	Single sword fern	1.50	1.00	.50
205.	Single foliage plant	1.50	1.00	.50
206.	Single fuschia in bloom	1.50	1.00	.50
207.	Single geranium in bloom	1.50	1.00	.50
208.	Single begonia in bloom	1.50	1.00	.50
209.	Single hanging basket	1.50	1.00	.50
210.	Single palm	1.50	1.00	.50

CUT FLOWERS.

To be placed on exhibition Tuesday, a. m., the second day of the fair.

Lot		1st Prem.	2nd Prem.	3rd Prem.
211.	Collection of asters	2.00	1.00	.50
212.	Collection of coreopsis	2.00	1.00	.50
213.	Collection of dahlias	2.00	1.00	.50
214.	Collection of everlasting flowers.....	2.00	1.00	.50
215.	Collection of nasturtiums	2.00	1.00	.50
216.	Collection of pansies	2.00	1.00	.50
217.	Collection of marguerite carnations.....	2.00	1.00	.50
218.	Collection of verbenas	2.00	1.00	.50
219.	Collection of zinnias	2.00	1.00	.50

CLASS—MUSHROOMS.

Lot 220. To be placed on exhibition Tuesday morning, the second day of the fair, and renewed from day to day up to and including the Friday following. The exhibits will be judged daily.

Premium, $30.00, to be divided pro rata among the exhibitors.

Fill in Under the Newly Planted Tree.—It is very important when you have your trees set that there be no loose or open spaces under the stem. When you have your tree partially set, the outer ends of the roots made firm, in very many cases directly under the center of the stem there is more or less open space for air, which should be thoroughly filled before filling the hole any more. There are two ways of doing this. If dry I prefer filling in around the tree on the outside the hole, till when it is stamped down it will be lower near the stem; then turn in water and fine earth and see that the water settles the fine earth or thin mud down and under the center of the stem. This properly done will firm the earth about and under the stem better than can be done with fingers.—Edson Gaylord.

HARVESTING THE BLACKBERRY CROP.

G. E. WIDGER, CHATFIELD.

The subject assigned to me I consider a very important one. I have had a great deal of experience in the work of harvesting and marketing the blackberry crop. I have always had a home and near-by market, so I have never had to ship many berries.

Important factors for the consideration of berry growers are the picking, packing and marketing of the berries; this work very often determines the success or failure of the business.

In picking we employ mostly grown people, and no small children. Each picker is supplied with a four-quart picking stand, and two persons work, one on each side of the row. I have always made it a rule to have the boxes well rounded up, and never have any over-ripe or soft berries put in the box.

Each picker is furnished with a ticket. The person employed in the packing house is supplied with a conductor's punch, and when the pickers come to the packing house he punches the ticket to correspond with the number of full boxes which they have. The person employed in the packing house looks over all berries picked by inexperienced workers.

I never use old or second hand boxes or cases, as I think the sale of a package depends almost entirely on its appearance. I do not think a person can be too strict in picking and handling the blackberry crop. I always have experienced people in the berry patch to see that the picking is done properly. We generally pick every other day, but sometimes we pick every third day.

I warrant all my berries to be first-class or money refunded, so I have no trouble in disposing of them, and they always bring a good price. My greatest trouble is that I cannot supply the demand. We supply several different towns with berries, and I keep two teams on the road nearly all the time during the picking season. I never sell to dealers. I fix my own price and the dealers sell on commission.

Mr. Wright: How many acres of blackberries have you?

Mr. Widger: Four acres.

Mr. Elliot: What do your blackberries average you.

Mr. Widger: Well, they average—I could hardly say. I sold them for ten cents, and a few for a shilling. I did not sell any for less than ten cents.

Mr. Wright: Was that this year?

Mr. Widger: Yes, that was this year; last year I sold them for eight.

Mr. Haggard: What do you pay for picking?

Mr. Widger: A cent and a half.

Mr. Haggard: How do you have them sorted?

Mr. Widger: We have a person in the packing house, and if we have boxes come in and do not know what kind of berries they contain, we have them emptied out into other boxes and pick out the poor berries, and in that way we keep watch of the poor pickers.

Mr. Haggard: What do you do with the inferior berries? Do you leave them on the vines?

Mr. Widger: Yes, we leave them on the vines.

Mr. Beardsley: How many cases did you get?

Mr. Widger: We picked something over eight thousand boxes.

Mr. Beardsley: How long have you been growing blackberries?

Mr. Widger: I have been raising blackberries for eight or ten years. We also raise strawberries and raspberries. We had something over eight thousand boxes.

Mr. Beardsley: What variety of blackberries do you raise?

Mr. Widger: Ancient Briton, Snyder and Stone's Hardy.

Mr. Latham: What is the character of your soil?

Mr. Widger: It is timber land; it is new land, all of it.

Mr. Yahnke: How old is your plantation?

Mr. Widger: My oldest is about nine or ten years old, and there are parts of it not so old.

Mr. Yahnke: Did you ever manure it?

Mr. Widger: Yes, I manured part of it, but I never mulch my blackberries. I don't think it is necessary to mulch.

Mr. Smith, (Wis.): Do you consider eight thousand boxes a good crop?

Mr. Widger: Yes, sir, I consider that a good crop.

Mr. Smith: How far apart are your rows?

Mr. Widger: Eight feet apart, and three feet in the row.

Mr. Elliot: He spoke of the quantity of berries raised per acre. I want to call your attention to a little piece of ground, about a quarter of an acre, on which this year were picked seventy-one and a half crates, which marketed for $106.75. That is at the rate of about 4,576 quarts per acre. The method raising those blackberries is like this: In the fall of the year they are laid down and covered with soil (it is a clay soil). Then there is a mulch put on top of that, which acts as an extra protection for winter. In the spring this mulch is pulled out into the middle of the row, and when the vines are uncovered the soil is put on top of this mulch and as the weeds start the cultivator is run over the top, but the mulch is so rotten it does not interfere with cultivation. It is kept thoroughly cultivated until berry picking begins. The fruit is turned over to an association that has made arrangements for shipping their berries to Dakota.

Mr. Wright: You can take a small piece of ground in a very superior location and make it yield much better in proportion than several acres, as a rule. From my experience on my own place, I

can say that I have a little corner of blackberries that has done better than anything else on the place. From one-fifth of an acre I picked sixty-two crates, which is at the rate of 4,960 quarts per acre, but the whole plantation does not do that well, although it has the same care.

The President: You do better with your corner of blackberries than Joe Lieter did with his corner in wheat. (Laughter.) There is one thing very evident. When we are speaking of those small patches that are giving such wonderful yields the man that grows those berries has to buy them and pay for them, otherwise he would put the rest of his farm into blackberries. But when he comes to pay all the expenses he finds there is not very much left to the credit of the blackberry patch after all, so he does not enlarge it to four or five acres.

Mr. Latham: The reason Mr. Wright does not enlarge is because he has not got the land, but he is about buying another piece of land and will now, no doubt, enlarge.

The President: That is pretty good evidence.

THE PRACTICAL VALUE OF ORNAMENTATION ABOUT THE HOME.

PROF. W. W. PENDERGAST, HUTCHINSON.

In order to make this subject presentable at all we must modify our ideas of what practical means. We have generally looked upon the word practical as belonging to something that is directly or indirectly connected with money getting. Now in gold mining, for instance, we are at work directly for money, for there is nothing to be done to the pure gold we get out of the mine but to give it the proper amount of alloy and then touch it with the stamp of Uncle Sam's mint. In our manufactures and in the products of the soil we indirectly get at the money. We raise something we can sell for money, but we do not see how we can make use of shrubbery around the home for any of those purposes. The seeds are worth nothing as food for either man or beast. You might turn in a few goats and let them eat the shrubs themselves; they probably would do it, but it would not be a paying operation to raise shrubs for the goats to eat and sell the goats. So I have put a different meaning upon the word, and say that:

Whatever adds, or, by its proper use, may add to one's comfort or convenience, or which, in the last analysis, amounts to the same thing,—whatever is of use in increasing the enjoyment of others, has a practical value. It may not add material wealth, but will enrich the mind. A fat pocketbook, full stomach and fertile acres joined with barren aims, crude ideals and low

desires make a bad combination. Some of the soul-destroying moil of money-making must be eliminated. There may be gold untold buried deep in the frozen heart of Alaska, but the life spent in finding and unearthing it must be a joyless and comparatively useless one. So the man who owns a little piece of mother earth, but is spending all his time endeavoring to lay up wealth against a time of need, lets pass the real "time of need" without an effort to meet its demands. Where one fails to secure bread enough to keep soul and body together, a hundred are so morally starved that a divorce of soul and body could hardly be deemed a misfortune, either to the man himself or to the community which he did nothing to benefit. Better set apart a portion of that land for improvement during his leisure hours, while he is at the same time improving and developing his own higher nature.

The owner of a home may make that home a thing of beauty and a source of joy to himself and others by ornamenting it with well-chosen shrubbery, tastefully arranged, and giving it proper care. It is fortunate that in this favored land every young man of sound health and intellectual vigor may confidently look forward to the possession of such a home and all the happiness the name suggests. The greatest pleasure comes from giving pleasure to others, and these inexpensive adornments, which delight the eye of the passer-by, are silent but efficient teachers of the practical value of esthetics and the benign influence of beauty upon life and character. Moreover, the occupants of such a home will soon begin to take an interest in living in harmony with their environments, and if we can conceive of their being low and brutish by instinct can we imagine them so stupid as not to perceive the difference between the discord within and the harmony without? They will, perhaps unconsciously and with little will power at first, endeavor to make the different portions of their abiding place more nearly correspond to one another. They will see the present condition is as outre as a patch of royal satin purple on a jacket of linsey-woolsey. It would be like using Neptune's trident for a pike pole or the spear of Ithuriel for a dung-fork.

Carpets and costly furniture are constantly growing worse with even the most careful usage. With similar care the shrubs and vines are, year by year, growing into beauty, and the little patch of ground around the home becomes more and more attractive. People, going by, admiring, say, "What a pleasant place to live!" Touched by the appreciation of what has already been done, the family are inspired to do something more towards making home brighter, and when neighbors, quickened by their example, begin to think of utilizing the waste, weedy spots about their homes and come, as they surely will, to those who have had successful experience for advice, and, now and then, ask for a slip or a root of something that has particularly struck their fancy, the groveling souls that started this good work become more conscious of its merit and are lifted up a step higher.

In the short space of five minutes, one can but glance at a few of the advantages that spring from the cultivation of flowering shrubs and climbing vines about our doors, but that one glance should be enough to convince the thoughtful that nothing is more practically useful than to increase one's appreciation of the beautiful.

Mr. I. M. Smith, (Wis.): The paper that interested me most was the president's paper in the way he put forth the idea of the

practical value of trees and shrubs about the home. A few weeks ago, with one of our men to help me, I put into winter quarters a number of tubs of water lilies. I made some remark about them, and the man said they were pretty to look at but of not much practical value. I said, what do you do with your money? Is not the most we can do with our money to make people happy? That is what these water lilies help to do, make some one happy. It seems to me that is the right way to look at it. We may dig gold or raise potatoes, corn or apples, but the end of it all is to make ourselves happy. Perhaps that comes indirectly from making some one else happy. Some years ago we had a farmers' meeting at our place, while mother and father were still alive, an annual festival where a number of city folks also gathered together, and the roses were simply a mass of bloom. We had not gathered them for a few days because we wanted to keep them for that particular occasion, and at night when the company went away you could hardly pick a button-hole bouquet. I said to mother, "We seem never to have gotten so much out of our flowers as we did today." There was a company of perhaps two hundred people on the place, and when they went away there was a large number of them that had either a bunch of roses or something else that might be in bloom at that time. It was a pleasure to them to take those flowers home, and it was a continual joy to them to look back upon that occasion. We should not look upon everything as simply producing so much money. We cannot eat money; if we did not have a place to spend money it would be as worthless as so much sand. (Applause.)

The President: What Mr. Smith says reminds me of an incident that happened in Montana. A few years ago a friend of mine, in fact, an old student of mine, went out there and engaged in the cattle business, owning a large cattle ranch. One day a buffalo cow and calf became separated from the herd and mixed with his herd of cattle. He was very anxious to secure that cow and calf, and he got all his men out with their lassos trying to lasso the cow and bring her into his corral. After a while he gave it up, she would tear away and unhorse the cow boys, and they could do nothing with her. They gave up trying to bring in the cow, but he told his men if they could not get the cow they should make sure of the calf. They had but little difficulty in lassoing the calf and bringing it into the corral, and when he went into the gate the cow went in beside him. That is to show what Mr. Smith was speaking about, a great many things can be brought about indirectly when it is impossible to bring them about directly. A great many cases I have noticed in my life were just like this, showing that the great

end of life being happiness, the way to secure it is by the indirect way of working to make it as pleasant for other people as possible, and making yourself as useful to them as it is possible to do, and it will have a reflex influence on your own life. What Mr. Smith said was this, that the great mistake we all make is in working too much for ourselves; we have too much egoism and not enough altruism.

HOW I MANAGE MY BEES.

C. THIELMANN, THIELMANTON.

I hardly know where to commence, in the spring, summer or fall, as it is a continual routine of manipulations to obtain the best results for surplus honey and also have the bees in the best possible condition for winter when the honey harvest is over. I will say that I work my bees mostly for comb honey, for which I find ready sale. For producing comb honey we must have our colonies strong in bees when the honey harvest comes, but as we can not foretell when that will be, I try to raise as many young bees as possible from the time I set them out of the bee cellar until a flow of honey comes, if ever, though I never have had a failure in thirty years, except once (in 1890). Most of the honey flows come at irregular times of the seasons, all the way from June until September. In order to get my bees strong, in the spring I see that they have sufficient food, (I find honey far better for breeding than the best of sugar) and keep them as warm as I can, until warm weather sets in.

I do not put supers on the hives until honey is coming in freely, when the bees begin to put new wax along the top bars of the frames. If the supers are put on before a honey flow, they sometimes gnaw and multilate the foundation and spoil it by sticking it full of propolis, which they dislike to clean up again, and when a flow does come such sections do not sell for the best price.

I let my bees swarm naturally, but have the queens clipped, and when the swarm comes out I cage the queen and lay her at the entrance and let the swarm come back to their old stand. On the seventh or eighth day after, I cut all queen cells from the combs. If there is not a young queen hatched I lay two or three of the best cells in the entrance, which the bees will protect until they hatch. The first hatched will go into the hive and will reign and kill those that enter the hive after her. In this way I re-queen most all the colonies that swarm. The old queen is subdued or made use of otherwise—I do not wish any increase; and in this way I can keep my colonies strong.

I cut out all the larger patches of drone comb and replace them with worker comb, sometime in May, when the weather gets warm. If these patches are not replaced with worker comb, the bees will rebuild them with drone comb again. I manipulate my supers on the tiering up plan, which you all know; sections not filled when the harvest is over are extracted as soon as possible and given back to the bees to clean them out thoroughly, when they are stored away clean for next season's use. There is great value in them, especially in scanty seasons.

The fore part of October I weigh all my colonies and mark the weight on the honey board of each hive, and those that have less than thirty pounds

net of honey are fed enough to make that. This, I find, as a rule, will last them to some time in May. I do not bother with packing cushions, paper, burlap, or anything else; nothing but the honeyboard over the frames is shoved forward so a little crack or opening is made, about one-sixteenth inch the whole width of the hive, for a little upward ventilation. This is done when the bees are put in the cellar. The entrances are left open the whole width while in the cellar. In this way I have had good success wintering my bees for the past twenty years. There are many other minor points in the management of bees to get the best results, but this essay would get too long to mention them all here.

TOMATOES IN THE HOME GARDEN.

REV. T. H. YOUNGMAN, MITCHELL, S. D.

(Read before the State Horticultural Society at Parker, S. D., Jan. 17, 1900.)

For South Dakota, where land is cheap and seasons short, the prime necessity is an early kind of tomato. We can afford to sacrifice, if need be, quantity and quality in the interest of earliness. One ripe tomato is of more value than two that are not ripe. With this in mind, I set myself the task, fifteen years ago, of increasing the earliness of an early tomato by saving the seed from the first ripe tomato, and am continuing the effort, in hope of getting ripe tomatoes in my garden, without the help of a greenhouse, for the 4th of July.

The kind selected, the next thing is plants. I have always grown my own plants. I sow in a box, six inches wide, three inches deep and as long as the window is wide. Sow the seeds thinly, so that the plants will not come up in bunches. Put a toothpick against those that are first to break the ground. The quickest to start will be the first to ripen, providing you change them around every day; otherwise if there is but little sunshine the plants will come up first on the side furtherest away from the window. The reason is manifest, this being the warmest side of the box.

As soon as the plants begin to show the second leaf, I transplant those that I have marked with the toothpick for my pedigree, early stock. I never knew the others to overtake these. There will be a difference of from one to two weeks in the time of maturity of fruit from the same box and seed.

I am very careful to air my plants so that they will not grow long and slim. I have had fruit set when the plant was not over a foot high, and have seen them in full bloom when the plant was not over seven inches high.

For earliness, I prefer the poorest soil there is in my garden, providing always that it is where the plants will get the morning sun and be protected from the northwest winds.

I pull off the leaves up to the last pair, close to the bottom, make a cut in the soil and a perpendicular hole at one end of the cut, or trench; put the root into this hole, and bend the plants into the trench; cover with soil, and firm it with my feet. You will think you have lost your great stocky plants, but you have not. Roots will start at every joint that is covered with soil and be feeders to the blossom you left out. The roots are to a plant what the base of supply is to an army.

There is special advantage in the manner of planting, if your plants have been grown in a greenhouse, or crowded. In this case, they are so tender,

that if they are not thus planted, the wind will whip them to a bare stalk, and what the wind will not do toward killing them the hot sun may be trusted to perform. Also, if you plant as herein recommended, you can cover the plants with strawberry boxes or a handful of hay to protect from late frosts.

Keep free from weeds by frequent working of the soil; this also conserves moisture. Use no poles or supports of any kind, as they give undue advantage to the wind. Let the plants fall over on the ground. Cut out suckers as fast as they grow, and you will have ripe tomatoes to sell when they are worth $4 a bushel and to eat when they are worth six to ten cents a pound.

For the general crop plant in better soil, but in Dakota do not put tomatoes on very rich ground.

THE LOUDON RASPBERRY.

PROF. S. B. GREEN, ST. ANTHONY PARK.

As a general purpose raspberry, I know of none better for the average grower than the Loudon. It is of very vigorous growth, and produces a large number of bright red, firm berries for a long season. No other rasp-

LOUDON RASPBERRY.

berry on our grounds seems to have so many desirable qualities; but our soil is not first-class fruit land, as it is underlaid with sand at a depth of from four to ten feet. Some of our best raspberry growers have objected to it on the ground that the berries were so hard to pull off the plants until they were fully ripened, but this has not been especially noticeable with us.

WHAT I SAW OF FORESTRY IN EUROPE.

HON. S. M. OWEN, MINNEAPOLIS.

It was my privilege to visit Europe, where forestry is a great question. Being naturally much interested in it, I tried to get all the information I could in regard to the administration of forests in the countries I visited, and where I could get no special information, or where circumstances did not enable me to investigate forests or learn methods of administration, I observed carefully while traveling in private or public conveyances. In Germany my observations were confined almost entirely to those of the latter character. I traveled through much of the forest area of Germany, but about all I did there was to observe the marvelous and beautiful condition of the forests. I could see that non-agricultural lands had been devoted to forests, with trees now ten to twelve inches in diameter and larger, and kept wonderfully clean and looking charmingly thrifty. Pine is growing on rocky hillsides very much as we see them in New England; the surroundings are much the same; but not only in such localities, but on what seemed to be good agricultural lands, and where I was told forests had previously existed and had been destroyed, and it had been found necessary to restore them by replanting, on account of climatic and other conditions. German forests are now great sources of profit, besides being highly advantageous in other ways.

I had the best opportunity of studying forestry while in Switzerland. I was really more interested in the subject in Switzerland, by reason of the apparent difficulty of growing forests there, and because it is a smaller community, with more resemblance to Minnesota as to population than is Germany. The population of Swizterland is something like three millions, and its area is about one-fifth that of Minnesota.

The forests are under government control, and so are many other of her public interests. It is, perhaps, the best example of state socialism on earth today. The cutting of timber is regulated entirely by government officials. Even the man who owns his timber is restricted as to the timber he can cut. Each resident is assigned the amount and kind of timber he may cut for fuel during the year, and all of the timber so cut must be used for fuel. If he wants trees for building, he cuts whatever is deemed sufficient for that purpose, but all of the branches, even down to the small twigs, must be used, and that is applied to his quota of fuel for that year. It is the finest system for the conservation of timber imaginable. You will see in going through Switzerland not the gross waste of wood that we are so familiar with in this country, but will find little piles of fire wood cut stove length, piled up snugly under wide eaves of the cottage, and there are little twigs often not larger than lead pencil, all tied up in little bundles ready for the stove. There is much timber used in Switzerland for building purposes, more than in other parts of Europe I visited, and, as it is populated ten times more densely than Minnesota, the free use of timber makes it necessary to look carefully to the re-growing of forests as well as to the conservation of what they now have. It is a rule that for all the trees cut in a commune in any one year there must be planted an equal number, and this is done under the supervision of government officials.

One will see, sometimes on mountain sides, and often at giddy heights, little patches of young timber, which represent in part the trees cut in that locality the year these youngsters were planted. These embryo forest

patches are of widely varying ages, some of them nearly large enough to begin to contribute to the demand for fuel or building.

I wondered why the people of Switzerland so willingly submit to such supervision and control of their own property. I asked: "Do you own these lands?" "Yes. All the agricultural lands of Switzerland are owned by the men who work them." There are no landlords there, and all farms are small. Then I remarked: "Individuals must own the timber lands not owned by the government, yet they allow government officers to dictate to them just what timber to cut from their own lands; it seems to me you are submitting to an interference with private rights by the state that we in America would not tolerate." "How so?" was asked, surprised at a suggestion of that kind. "We would call it a violation of the rights of ownership to have the state come in and dictate to us where and how we could cut our timber," I replied. Said they, "We do not look upon it in that way. Timber belongs to the state; is under state control, and we are the state. Hence we control the timber. Do we not?"

I confess that conception of the relation of the citizen to the state, so different from ours, thrilled me. Here we consider the state something outside of and in a sense antagonistic to the individual, and any function of the individual surrendered to the state we consider a misfortune, necessary, perhaps, but very deplorable. If we had the conception of the relation of the individual to the government that obtains in Switzerland, there would be no trouble in having a state administration of forestry that would change existing conditions for the better to an incalculable degree. If we could feel when we put an interest into the hands of the state that it is yet in our hands because we are the state, then it would be easy to get an administration of forestry that would look to the conservation of forests we now have, and that would in time reforest denuded areas.

We have been absolutely criminal in our treatment of forests. Starting on the Atlantic, in those mighty forests of Maine, almost incomparable for extent and quality of timber, the work of devastation began, the cruel despoliation following the sun to the westward. Everything of the forest kind, pine, oak, walnut, all went down before the thoughtless ax of the woodman, and with never a thought of the importance of having the gentler planter or conservator heal the awful wounds made by the greed-inspired ax and sawmill. Pennsylvania, New York, Ohio, Michigan, in turn rich treasure houses of magnificent timber, and each in turn great centers of lumbering, have now passed out of that realm of usefulness and profit, their forests gone, mills abandoned or removed. The Saginaw valley, of Michigan, only a few years ago the chief lumbering district of the nation, has now reached the point where the comparatively few logs it now cuts are brought from Canada, and where hitherto busy mill yards are given over to desolation and decay.

In Minnesota and Wisconsin notice is already served that in a few years more, five or ten at the furthest, the obsequies of dead forests will be celebrated by the removal or abandonment of saw mills, lumber yards and factories. Already great companies and syndicates from the last named states are buying huge areas of timber lands on the Pacific coast, there to repeat, amidst our last remaining forest treasures the vandalism of timber devastation that has disgraced our age, nation and name.

Cutting merchantable timber, that which is matured and ready for the harvest, is both necessary and right; but over thousands of acres not needed

for cultivation or unsuitable to it, the cutting should have been so controlled that restoration would have followed, and now we might be getting supplies of timber from areas cut over a half a century ago or less.

It is high time that we set about following the example of Europe in preserving and restoring forests. The methods are before us, the experiences are there to inspire us, and we are not worthy of our age or country if we do not arise to the importance of the occasion and treat it as becomes intelligent, provident, far-seeing citizens. Let us realize that we owe duties to posterity that it is criminal to neglect! Let us take counsel of the intelligent citizens of Switzerland! Let us realize that we are the state, and in that sense let us take up the work of forestry administration and prosecute it in a manner that will insure an ample timber supply for the future, and in doing that we will bless those who are to come after us, and they will rise up and call us blessed.

Prof. Hays: To what size do they grow their trees in Switzerland before harvesting?

Mr. Owen: I saw none less than about eight inches.

Prof. Hays: They are cut between that and twelve inches.

Mr. Owen: Yes, about that. By the way, I took a walk one day for several miles in a valley, and there were little mills where a stream of water comes down from the mountain, a little rivulet, but sufficient to run a mill capable of turning out two or three thousand feet of lumber a day. The lumber in Switzerland all seems to be cut in that way. There are no great, greedy corporations owning all the land and slaughtering timber without regard to present or future effect.

Prof. Green: What were the logs?

Mr. Owen: A good deal of white pine, birch, fir, and a sort much like Georgia pine.

Prof. Green: Scotch pine?

Mr. Owen: It is yellower than our pine.

Prof. Green: Any larch?

Mr. Owen: I do not remember seeing any.

The President: Did you learn whether they planted the white pine on the ground from which pine had been cut?

Mr. Owen: Yes.

Prof. Hays: What is a commune and a canton? What is the size?

Mr. Owen: The canton is to the Swiss confederation what our state is to the United States. Cantons vary much in size. The commune is what we would call a township. It is a small area. Switzerland is a thoroughly self-governed country, a pure democracy. Every measure of importance is passed upon by the people, through the referendum. Getting possession of the railroads was not a matter that was worked up in trying to get representatives

of the legislature and congress to work for or against it, but the people voted on it directly and settled it. I asked if there was no legal objection or obstruction thrown in the way of the state acquiring possession of the railroad. They looked at me with astonishment. "What do you mean?" I replied: "In our country when the people pass on a matter we have a court that sometimes declares that a law is not good, and the will of the people is overruled." "What is this court? Where does it come from? Do the people make the court?" "Yes." "And yet the court overrides the will of the people as expressed by their representatives?" "Yes." "Well, we have nothing of that kind here; the people are their own courts." (Applause.)

Mr. Underwood: In your estimation how great a figure does the conservation of the timber or the growing of timber cut in the conservation of moisture?

Mr. Owen: As to the annual rainfall it does not seem to cut much of a figure. But in the distribution and control of rainfall forests exert a powerful influence for good. There are great forests in Switzerland that must remain there because they are absolutely inaccessible. So that it must be sufficiently well forested to have a favorable influence on rainfall. I was traveling through a valley one day and saw trees that must be large, though from the distance they were above me they seemed small, and it seemed they were growing right against the face of a perpendicular wall. I asked: "Must that timber be assigned by an official to be cut if anybody wants it?" "No," was the reply, "if one wants to cut that he is welcome to it." If it is cut it will fall into a bottomless abyss below or lodge against other trees, or must be hauled by ropes to the top of the cliff after cutting if it is secured. I said, "You say under these circumstances the timber is free?" "Yes." Then never tell me again that republics are ungrateful! (Laughter.)

Mr. Underwood: I asked what part those conditions would play in regard to the rainfall in our state?

Mr. Owen: That is pretty well settled. The presence of forests, judged by the records we have, do not seem to have an important influence on the total annual rainfall, but with the distribution of rainfall they have much to do. We know that countries are much better off with forests than without, and we do know that deforested regions have proven so disastrous that reforesting was absolutely necessary.

Mr. Sargent: What distance apart do they plant their trees?

Mr. Owen: They don't care much about that, unless it is to plant irregularly, or more as trees grow naturally. You see little farms,

half an acre in size, little vineyards, little patches of garden, bits of timber way up there on the mountain side; it makes one feel weak in the knees to look at them, and you are too busy looking at the grandeur of the scene to care much about whether rows are straight or not. The farms are so high up and so steep that if a farmer stubs his toe he may fall into the next county. (Laughter.)

Prof. Hays: I just want to say a word in encouragement. Mr. Owen has brought out one thing that I believe should be taken to give us new courage. We have here a republic that is even more communistic than we are. Why are we not American enough to do this thing, to ask our legislature and congress for bigger appropriations and show them our faith, and to have some faith ourselves?

GROWING APPLE SEEDLINGS.

FRANK YANKHE, WINONA.

The art of growing apple seedlings for the purpose of new varieties rests upon the same principles that the stock breeder follows to improve his stock.

The horticulturist who wants to grow seedling apple trees to get a new variety of apples must have a clear conception as to what kind of an apple and tree he would like to produce. If a long keeping apple, red in color, tart in taste, a hardy and prolific bearing tree is the aim of the grower, he must select a tree which is a prolific bearer of long keeping apples, and if possible, apples having the desired color and taste. Then he must select another tree which has the full hardiness desired and other good qualities, as good as can be gotten with the hardiness. When these apple trees are in bloom, pollenize the blossom of the former tree with the pollen of the blossom of the latter tree. The pollenization must be done by hand. The blossoms you want to use for pollenization, of either tree, must be covered with mosquito netting from the beginning of bloom to the end, in order to keep the bees from them. If the bees have free access to the blossoms they may pollenize them from trees not desirable.

When the apples are ripe select the best ones for seed and plant this seed the same fall. When the seed comes up in the spring take good care of the sprouts until they are two or three years old. Then select the thriftiest and apparently the hardiest, having the least thorns, and transplant them for trial in the orchard.

The horticulturist may not reach his desired end in the first generation, and, therefore, he must follow it up with these seedlings until he has the desired apple and tree. With the many seedlings we have already and with good care he may succeed in obtaining the desired fruit and tree in the first generation.

To raise apple seedlings from the old American standard varieties is not advisable. I have experimented with them for twenty-five years without any satisfactory result. The Duchess and other Russian varieties are superior to them.

I believe the best result can be obtained by crossing our hardy seedlings with the best American varieties. I would advise to take a good American variety which drives its roots deep into the ground, free from blight, and

whose fruit hangs fast to the tree, and cross-fertilize it with one of our good hardy seedlings which bears large apples.

Before I close this paper I would like to emphasize that we have to consider the roots of a tree as much as the top. A tree which drives its roots deep into the ground like an oak will stand the hard winter better than those with spreading roots. We see this on the Russian crabs, which all drive their roots deep into the ground. On the contrary, the Russets, which spread their roots, are very easily winter-killed.

Mr. Wedge: I feel like endorsing what Mr. Yahnke has said in every particular. My predecessors have experimented a great many years with the eastern type of apple and very little has resulted from it; possibly the Wealthy may be an exception. By taking the hardiness of the Russian varieties and combining it with the qualities of the American apple by cross-fertilization, it seems to me we cannot possibly fail to get what we want, if we simply plant enough seed.

Mr. Harris: A considerable number of years ago Mr. Peter M. Gideon said he had gone as far towards getting the apple we want as he could go with the material at hand, and he said if the state had a station a little further south where he could mature some varieties and cross-fertilize them with those here, he would soon have the apple we were looking for. At the time I did not think much about it, but now I think Mr. Gideon was right, and if we would secure that large sized and good keeping apple that we want, if we could have it cross-fertilized with such varieties as they are raising in the south, in southwestern Iowa and Arkansas, I think it would solve the problem. I have no doubt there are some apples that could be top-worked on Mr. Gideon's trees and live long enough to produce fruit in the natural way. If we can mature some of those choicest large varieties that are so popular on the market, the first thing we know we will have it.

Mr. Sherman, (Iowa): I would like to know what the objection would be to gathering the pollen in the south and sending it here?

Mr. Harris: Our average farmers and horticulturists have not the time to do that. Our experiment station might do it and get good results. But after all the best things we have man did not make. The wind and insects and the atmosphere surrounding us all have their share in that work, and nature has a way of doing things that man cannot do. When we think of the progress that strawberry culture has made it is almost beyond conception. Many of us remember when there were only a few varieties that were cultivated, and now they run up into the thousands.

Mr. Burnap, (Iowa): It is nearly time when it is necessary for me to take the train, but before going I feel that I must thank this

society for the cordial manner in which I have been received here. I have been especially interested in the discussion that you have had this afternoon. I believe your success in apple growing will be right along that line. I do not know how long it will take, I do not know how many difficulties will interpose between us and success, but I believe success is at the other end of the line. Furthermore, I want to say that you must get a hustle on you or Iowa will get that thousand dollar premium. I want to make an agreement with you, that for every desirable seedling that you will send down to northeastern Iowa, we will send you a desirable seedling back. (Applause.)

I want to say a word in addition to what Mr. Sherman said this morning. As a member of the Northeastern Iowa Society I want to thank you for the action you took in regard to Mr. Patten this morning. I think that is one of the cases where you builded better than you knew. Knowing Mr. Patten as closely as I do, and knowing that with him money is always a secondary consideration, and knowing his sensitive feeling as regards his work, I believe this action taken by the society will come to him with a very great pleasure, and in his name and in the name of the society I thank you for it.

Prof. Green: I had the pleasure of spending parts of three days with Luther Burbank, and in talking over the crosses he said this: that formerly he made many crosses in order to get variations, but continuing this work over a long series of years he found most of the stock grown on his ground is mixed; so he resorted to hand crossing and keeps the true seedlings from his cross stock, from which he gets the best result two or three generations from the crosses. Many of his best seedlings are the result of careful hand made crosses. Now he largely depends upon the work of insects. He started with hand crossed seedlings, the work of insects and so on and crosses things as much as he can. There is practically no certainty in the matter of seedling plants, and they do this crossing so as to get them mixed up and raise an immense number of seedlings to select from.

Mr. Sherman: He depends upon cross fertilization to get variation?

Prof. Green: That is it exactly.

Mr. Harris: Mr. Gideon's practice was to mix everything together, but we still lacked something to keep all winter, and he proposed to try to get some of these things in the south where both would mature, where he could get them fertilized that way.

The President: It seems to me the more mixing up there is the more likely the plants will have a tendency to throw sports, and a great many of our best varieties of plants and flowers of every kind have come from sports that are distinctly different from anything allied to them.

SOME DESIRABLE THINGS FOR PRAIRIE PLANTING.

L. R. MOYER, MONTEVIDEO.

"Jock, when ye hae naething else to do, you may aye be sticking in a tree; it will be growing, Jock, when ye are sleeping."—Scott.

One needs to travel but a little way in the prairie portion of our state to see that a general knowledge of the trees and shrubs adapted to prairie planting is still deplorably lacking. The weary, monotonous succession of Box Elder and Cottonwood groves, alternating with Willow windbreaks, seems to indicate that the average prairie planter has not as yet heard of the great wealth of native and introduced trees and shrubs so well adapted to his wants. It is true that the graceful Elm and the shining leafed Green Ash are sometimes planted; but these trees on the prairie are so exceptionally rare as to make it seem probable that the prairie tree planter has never fully realized their adaptibility to his needs.

Speaking of the Elm family, there is probably no tree better adapted to deep, rich prairie lands than our native White Elm (Ulmus americana). Where the soil is drier and thinner no tree seems to be more at home than our sturdy native Cork Elm (Ulmus racemosa). This tree does not exhibit the pendulous grace of the White Elm, but shows a somewhat rugged, almost stiff top, similar to a Bur Oak. The leaves are large, and when the tree is in its full summer foliage it makes a grand appearance. The Slippery Elm (Ulmus pubescens) may be also grown with success on the prairies but should be treated as a large shrub. Perhaps the Elm family does not possess a finer tree nor one better adapted to prairie planting than the Hackberry (Celtis occidentalis). This is a common tree in all the native groves throughout the prairie regions of our state. When grown in the open it makes one of the most graceful of trees. Its summer foliage is very dense and luxuriant, almost tropical in its profusion. In the winter no deciduous tree presents a finer spray. Seen against a winter sky, few trees have a finer appearance. The many-divided, slender branchlets possess a grace and beauty all their own, scarcely equalled by any other tree.

The Oak family gives us the Bur Oak (Quercus macrocarpa). This tree, one of the grandest oaks, grows on bluff sides and in deep ravines throughout the prairie region. No tree that can be planted on the prairies will be less likely to disappoint the tree planter.

The Ash family gives us the Green Ash (Fraxinus lanceolata), a tree that nowhere flourishes in so great a degree as on the prairies. Had the groves on the dry prairies of Minnesota been planted with Green Ash instead of Cottonwood there would not have been so many discouraged tree planters in that region. The Ash family, too, gives us the Lilac, a shrub of foreign origin, that is nowhere more at home than on the prairies. The common Lilac (Syringa vulgaris), in both its purple and white forms, as well as in its several garden varieties, is very valuable for windbreaks and

screens, as well as for ornamental planting in the shrub border. The Persian Lilac (Syringa persica), is somewhat smaller in its habit and is propagated in both its white and purple forms. It is equally hardy, and in planting the shrub border it should by no means be overlooked. The Japan Lilac (Syringa japonica) is quite distinct in its habits and grows to be a small tree. It produces immense clusters of beautiful white flowers late in June, long after the common Lilac has ceased to bloom. The Chinese Lilac (Syringa villosa) is also very distinct and blooms very late, about two weeks after the common Lilacs are gone. It is quite robust in its habits and will need plenty of room when planted in the shrub border. Lady Josika's Lilac (Syringa josikea), appears to be hardy at Montevideo.

The Barberry family gives us the common Barberry (Berberis vulgaris), in its ordinary and in its purple leafed form, and also in the form known as the Amur Barberry, all very desirable for prairie planting from an ornamental point of view. The fruit is especially showy and attractive, and the plant is very hardy. It is said, however, that the Barberry serves as a host for the rust plant, so that its propagation near wheat fields cannot be recommended.

The Saxifrage family gives us the Philadelphus in several species and varieties, nearly all of which are well adapted to prairie planting. It is probable that Philadelphus Coronarius is not quite so hardy as the others, but it does very well on the prairies at Montevideo. In the prairie shrub border the Philadelphus is one of the shrubs that we must have. The Golden Currant (Ribes aureum) is another very useful shrub for prairie planting—absolutely hardy everywhere, and adapted to the most trying locations.

The Rose family gives the Nine-Bark (Opulaster opulifolius), very showy in flower and even more so in fruit, and quite hardy. The Spiraea, too, is a most valuable subject in the shrub border. The variety Van Houtii is said by some to be our best all-around shrub. Spiraea Hypericifolia is very hardy, too, and blooms quite early in the spring. Our native Willow-Leafed Spiraea (S. salicifolia) when transplanted to the garden is a valuable adjunct to the shrub border. The Shrubby Cinquefoil (Potentilla fruticosa) does well in the shrub border, producing its yellow flowers for a long time in summer. The Yellow Rose and the Scotch Rose are both very desirable, and may be grown without protection. The Japan Rose (Rosa rugosa) is one of the grandest shrubs for prairie planting, and ought to be grown everywhere.

The Apple family gives us the Mountain Ash, not quite hardy on the prairies, but it may be grown quite successfully by allowing it to sprout freely from the ground and treating it as a shrub. The Juneberry is at home on the prairies, the dwarf Juneberry being indigenous to the prairie regions. It is of the easiest culture and ought to be in every shrub border for its early spring flowers. Its fruit is not to be despised and is eagerly sought after by the birds. A native thorn (probably Crataegus Punctata) does well in the shrub border. It can usually be found along the strips of native timber throughout the prairie region.

The Plum family gives us our American Plums, valuable in the shrub border and indispensable in the fruit garden; the two Sand Cherries (Prunus pumila and Prunus besseyi); the wild Red Cherry (Prunus pennsylvanica); the two Choke Cherries (Prunus virginiana and Prunus demissa)—all natives and valuable. Europe has sent us the Bird Cherry (Prunus padus)

and Prunus Maakii, a very early flowering shrub from Russia, both very hardy and well adapted to prairie planting. The Dwarf Almond (Amygdalus nana), from Russia, is a very beautiful early flowering shrub that ought to be generally planted. Its bright pink flowers are very showy, and it is easily propagated from sprouts and root cuttings.

The Pea family gives us the Coffee Tree (Gymnocladus dioica), a native tree of almost tropical appearance, and the Siberian Pea shrubs (Caragana arborescens, C. chamalagu, C. frutescens and C. pigmaea). The Caraganas come from the steppes of Siberia, and find a congenial home on the prairies of Minnesota. They are sure to give satisfaction in the most trying locations.

The Rue family gives us the Prickly Ash (Xanthoxylum americanum) and the Hop Tree (Ptelia trifoliata), the one a common native and the other ranging from Minnesota southward. The Hop Tree promises well at Montevideo.

The Shumac family gives us Rhus glabra, the smooth Shumac, a very ornamental native shrub found on the borders of woodland throughout the prairie regions. It is a picturesque and valuable addition to any prairie shrubbery.

The Staff Tree family gives us the Burning Bush (Euonymus atropurpureus), a native shrub on river bottoms, and the climbing Bittersweet (Celastrus scandens). The Burning Bush behaves well in the prairie shrubbery and ought to be generally planted. Its bright red fruit is very attractive. The Bittersweet has similar showy fruit and is one of our best climbing vines.

At the head of Maple family for prairie planting in rather moist locations is the Silver Maple (Acer saccharinum) and after that the omnipresent Box Elder (Acer negundo), the characteristic pioneer prairie tree. The Silver Maple does not do well on very dry land, and the Box Elder is short lived anywhere, although it grows rapidly when young. In planting the shrub border about the lawn of the prairie home, one should not forget the Manchurian Maple (Acer tartaricum ginnalo), a very graceful shrub with bright colored fruit and striking foliage.

The Buckthorn family may be represented in the prairie shrub border by the Buckthorn (Rhamnus cathartica), a very hardy shrub well adapted to screens and hedges.

The Grape family may be exemplified on the prairie lawn by planting a wild Grape so as to cover a rustic arbor, and by planting the Virginia Creeper (Pathenocissus quinquefolia) so as to overrun the porches and gables of the prairie home.

The Linden family may be represented by the Basswood (Tilia americana), but it is a difficult tree to transplant from its native river bottoms to the open prairie. It is well to let it sprout freely from the ground and treat it as a shrub.

The Oleaster family furnishes two of the very best silver leafed shrubs for prairie planting, the Russian Olive (Eleganus angustifolia) and the Buffalo-Berry (Lepargyraea argentea). The flowers of the Russian Olive are very fragrant in early spring, but the "olives" are rather insipid. The Buffalo-Berry produces an abundant supply of very sour, red fruit, useful for making jelly when currants are scarce.

The Dogwood family furnishes, as desirable material for the prairie shrubbery, our native Cornels (Cornus stolonifera, C. Amonum and C.

alternifolia). These shrubs produce in summer attractive white flowers, and the first two, by reason of the bright red color of the young branchlets, light up the winter landscape with a glowing red.

The Honeysuckle family furnishes much valuable shrubbery for the prairie planter. At the head of the list is the Red-Berried Elder (Sambucus pubens), a rank, vigorous native, sure to please when given plenty of room in a rich location. The native Sheep-berry (Viburnum lentago), with its thick, wax-like leaves, its large flat cymes of white flowers and its dark purple fruit, is a most attractive shrub. The Cranberry tree (Viburnum opulus) may be grown with good results, as well as its garden variety, the common Snowball. The Snowball should be in every prairie shrubbery. The native smooth-leafed Honeysuckle (Lonicera dioica) when transplanted to the shrub border and given good cultivation is sure to please. It should be kept tied up to a stake. The several varieties of Bush Honeysuckles are very valuable on the prairies. The old pink and white forms of the Tartarian Honeysuckle never disappoint the prairie planter. The varieties sent out by the Iowa Agricultural College as Lonicera Splendens and Lonicera Elegans are especially desirable. It is probable that the Splendens is the best all-around prairie shrub.

The Composite family gives us the Russian Artemisia, a very hardy shrub and one that does well on dry, sterile banks, where little else will grow. It should be pruned frequently during the summer to prevent fruiting.

With this great wealth of absolutely hardy material at hand, it is unwise for the average planter of the home grounds to experiment with anything of doubtful hardiness. Plant things that will grow without coaxing, and your garden and shrubberies will give you far more happiness.

Mr. Taylor: Mr. Moyer said the barberry was a good thing to plant except for the reason that it causes rust in wheat. I would like to know whether that is true. If it is true we ought to get rid of it.

Mr. Moyer: I have taken some pains to look up the matter, and wherever we find the barberry we find the black rust in wheat.

The President: My brother had a field of wheat that was completely destroyed by the rust. Within a dozen rods of that field was a little row of barberries. I told Dr. Lugger about the black rust, but I did not tell him about this particular case, and he said in every case it comes from the barberries. He said he went into the Red River Valley where he found rust in wheat, which he ascribed to the presence of barberries, but nobody knew anything about barberries, but afterwards he got a letter saying there were several lots of barberries in that vicinity. Then I told him the experience of my brother. He said it was always so, wherever the barberry exists the black rust exists.

Mr. Jewett: In a conversation I had yesterday with Prof. Lugger he brought out those same facts. There is another matter in regard to the rust that should claim our attention, and that is the rust on the apple tree. I read a short time ago in one of our eastern

agricultural papers a question that some one addressed to Mr. Van Deman, asking what caused apple rust, and the reply was that we would not find apple rust except where there was red cedar. We are free from it yet, but in the east where they have red cedar near their apple orchards they are troubled with the rust. If this is a fact ought we not to sound a note of warning against planting the red cedar?

Mr. Dartt: I suppose if I were not on the off side there would not be an off side. (Laughter.) The fact is that you have the black rust, and in looking over the country, you find some barberry bushes. There is no proof whatever that the barberry transmits the black rust. Here a gentleman says they found some rust on apple trees, and they found some red cedar, and so the red cedar caused the rust; there are most always red cedar where there are apple trees, therefore you must dig out your red cedar. That kind of argument does not go with me. I suppose I am against the crowd, as usual.

Mr. Jewett: I think, with all due respect to Friend Dartt, the opinion of Mr. Van Deman has as much weight as that of Mr. Dartt. I had planned to surround my orchard with red cedar, but I do not want to do it if it causes rust.

Mr. Dartt: The red cedar gets the rust from the apple trees. (Laughter.)

The President: Dr. Lugger said that in examining the fungus on the wheat it was found to be identically the same as that on the barberry, and then they began to investigate, and they found that there was invariably this condition, a field of wheat infected with the rust and barberries close by. I think my friend Dartt will admit that always where there is a field of wheat beside the barberry there is the black rust, and never under any other condition. I think it is best to get the barberry out of the way.

Mr. Dartt: That would be all right if you could prove that the rust comes from the barberry instead of going from the wheat to the barberry.

Prof. Green: Thirty-five years ago James Gregory, of Massachusetts, warned the farmers of the northwest and the United States generally that the barberry planted in the vicinity of wheat would produce black rust, and he put that in his catalogue year after year, so it is no new thing at all.

Mr. Jewett: Our esteemed professor of horticulture is a pupil of Mr. Gregory, and Gregory is reliable.

Mr. Wedge: I would like to hear a little more upon this question of the red cedar and the apple. You all know I am an apple crank, and the red cedar has been my hobby for several years, and I hope you will be able to return a verdict that the red cedar is not guilty. There is one mistaken statement, and that is that the red cedar is not general throughout the country.

Mr. Jewett: There are barriers intervening between those ranges of red cedar, so it is not general throughout. We now have prairies between us and the red cedar, but when the apple becomes general over those prairies the rust will run over our orchards like wild fire.

Col. Daniels: I remember years ago in traveling over Wisconsin, perhaps in 1858—wheat growing was the great industry in Wisconsin. A large number of people in Wisconsin were from New England, and they liked barberries. They could not obtain them of nurserymen, so a good many sent back to their friends and obtained them. The nurserymen then began to

propagate them, and we had good success in growing barberry hedges. It was a very popular shrub, but a rumor soon came about of the kind such as has been started here again. The matter was generally discussed at that time, and I think it was considered that the barberry was unsafe to plant, and it fell into general disuse. I think it would be difficult to find many barberries there now. As to this red cedar apple. Down on one of the old plantations I bought years ago in Virginia, the red cedar is one of the most common trees. I have seen orchards growing with great success along the valley of the Potomac, and I have seen as high as two thousand trees growing in the orchard successfully, and I know that the blight is very common. I know without spraying in that state nobody can keep fine fresh foliage on the trees. There are some few trees that seem to be rust proof among some two hundred varieties I have tried. There is one that is called the Early Morgan. I have never seen any blight on that apple, although I know it is completely surrounded by red cedar. Now that is a state of facts.

Mr. Dartt: After the barberry bushes were destroyed in Wisconsin did they raise better wheat?

Col. Daniels: I cannot say, as I did not remain there, but it was generally admitted that people would not take the chances of raising the barberry.

The President: When I left New Hampshire the barberry was everywhere, and the wheat was nowhere. Nobody ever thought of trying to raise wheat. I never saw a field of wheat growing that was not in the woods away from everybody.

Mr. Nutter: It seems to me there may be some misunderstanding in regard to this matter, in regard to the influence of trees and shrubs on the rust question. It seems to me you perhaps misunderstand the claims that scientists make. As I understand it, if the barberry is there the wheat will be rusted, and in regard to the red cedar the same is true; but there are two phases in the life of this fungus, and it requires the presence of both of them to complete its life. The tadpole must have the water to develop it, and it is the same in this, if we have the water we shall be troubled with the frogs, but if we do not have the water we shall not have the frogs. The one is necessary to complete the life circuit of the other. So the rust may start, I do not say where it originated, but in order that it may be propagated it must be necessary to have some plant to serve as a nursery for it.

Mr. Jewett: I presume there are hundreds of people throughout the state that are in the same condition I was in figuring to plant a shelter belt for the orchard. I thought of setting out the red cedar, but those who wish to set out evergreens should set out something equally as good as red cedar in preference to that, for if there is anything in this claim we will suffer for it hereafter.

Mr. Harris: I do not think our red cedar in this northern climate is found with those apples that have been mentioned. I think it is something like the San Jose scale. But the first thing you know that red cedar apple will be here, and you will get the rust. I know they have got it in Missouri and Arkansas.

Mr. Jewett: I regret that Prof. Lugger is not here, but he made the same statement as Mr. Harris, that this rust may come here later.

Mr. Clark: I want to say something about this barberry. I want to say this. I have had a farm in North Dakota for a number of years, and for the last twelve years especially I have been trying to get out of the wheat busi-

ness. I feel today as though I wanted to plant this barberry all around my place. (Laughter.) I wonder if it would not be a good idea for farmers to plant barberries all around their farms. They have got wheat down to fifty cents a bushel, and I think it is time to stop it in some way. (Laughter and applause.)

SEEDLINGS AT THE WISCONSIN EXPERIMENT STATION.

A. J. PHILIPS, SECRETARY WIS. HORT. SOCIETY.

I have been asked about the planting of seedlings.

When we decided to locate our new trial station or orchard, Prof. Goff and myself were appointed to select site. We went into northern Wisconsin, but did not find anything to suit us. As Prof. Goff was called away I notified President Kellogg to meet me at Wausau, and we located it there, because it was like much of the land in northeastern Minnesota where the pine had been cut off, and trees that would grow well on such land in our state would grow well on similar land in your state. After the ground was selected, at our winter meeting I was appointed to select the trees to plant, but that was a greater responsibility than I cared to assume. I declined to do it and offered a resolution that the president appoint three of our oldest orchardists to select varieties that they thought would answer for that climate. The president appointed Geo. J. Kellogg, J. C. Plumb and Mr. Hirschinger, the latter a man who raises some years as high as five thousand bushels of apples, and they made the selection for the commercial orchard. I was surprised after the statement Prof. Taylor made about the seedlings that originated in the north not being worth fifteen cents, that we had over two-thirds that were seedlings from either Minnesota or Wisconsin, and I spoke of that in our meeting afterwards, which was told to Prof. Taylor, and he modified it by saying that the originator did not make fifteen cents out of them. There was one thing certain, that those men who had grown gray in the work had either spent their lives in vain, or Mr. Taylor was mistaken.

The first row in the trial orchard on the west is set with Virginia crabs, top-worked with Wealthy, Malinda and Wolf River. Next are two rows of Hibernal, then two of Duchess, then the Northwestern Greening (of which I have fifty-four trees), then the Newell, a Wisconsin seedling; next the Longfield; then the Wealthy and then the Dudley Winter, which originated in Maine; then the Okabena, one row. Mr. Underwood sent me some seedlings, very nice trees, the Alma. They are a new seedling and are growing very nicely. He said it originated at Alma. Then we have the Hoadley from Baraboo, that Mr. Hirschinger originated, and the Dominion Winter from Canada. That constitutes the commercial orchard. There are only two or three varieties that are not seedlings. I carried to our meeting last summer the new growth of every variety we have there. Our people, of course, have but little chance to visit the orchard, and in order to show the growth of those trees I cut some new growth from all of them. I had a committee appointed, with Prof. Goff as chairman, to examine that growth and compare it with the growth in other parts of the state; it was quite an object lesson to them. There was only one variety that blighted, and that was the Newell, and I thought they would have to be reset, but when I went there late in the fall I found them well recovered so that there are only five in the row that will have to be reset.

Mr. Brand: Have you the Milwaukee?

Mr. Philips: Yes, we have the Milwaukee and the Windsor. In the trial orchard we have the Okabena, we have the Patten's Greening, the Wealthy, the Tetofsky and several other varieties sent by Mr. Patten to see how they would do by the side of northern grown trees. Next I set some Okabena root grafts and grafted it also on the Virginia crab; then I took the Newell and Wealthy and grafted them also. I have there three specimens of each variety. Now, if you go there in five or six years and find the trees fruiting you can see just what is the best way to set those varieties in that climate; as, for instance, the Okabena apple, whether it is best to set the root graft or whether it is best top-worked on the Virginia, or to grow it on its own stock. I have those experiments going on there on the Wealthy in the same way. I am conducting a series of experiments through three years, and if people will avail themselves of the opportunity they can go there and see which is the best way to grow those varieties. I think I know, for I have found at home that the Wealthy will last longer and be a better tree on the Virginia than any other way.

In the commercial orchard, I set thirty-six Hibernal trees. Nine of them came from the southern part of the state, nine from Sturgeon Bay, nine from Baraboo and nine from Janesville. They are all grown on different soils. If people go there and study those trees they will know where the best place is to buy trees, and the best soil to grow them on for soil that is similar to that. This is just a little outline of the work.

SWEET PEA CULTURE FROM A COMMERCIAL STANDPOINT.

MRS. HARRIET K. EVES, MINNEAPOLIS.

The past season has been a very unfavorable one to the sweet pea grower. While the crop in this vicinity has been far from a failure, it has been quite as far from satisfactory.

With me California seed, seed grown here one year from California seed, and seed grown many years in Minnesota, were alike in results. Peas planted in the same trench the fourth year, the third year one foot away from last year's planting and twenty feet from where legumes of any kind had ever been grown, were undistinguishable. I planted 1,500 feet of double row, and a month before frost came, the usual limit of our crop, scarcely a dozen good blossoms could be found on our place.

To raise sweet peas for the market with any probability of fair returns for your labor, you must have them early enough to get greenhouse prices for a while, must have long stems and good blossoms in something like equal quantities, whether the weather be favorable or not, and must keep up fair length of stem and quality of flower until frost comes, making as near a four months' season as possible, and, most important of all, must have a market for them.

Early sweet peas, though requiring a good deal of labor, are not difficult to raise. We start them in the house or under glass early enough to get good growth. The vines, unless the weather after planting out is unusually favorable, are of no value, but a good root ready for work eight to twelve inches deep in good soil will soon furnish vines, buds and blossoms. These transplanted peas are in no danger from the first pest of the sweet pea grower, the cutworm, but it is on these that the red spider, or rather the grey mite, begins its ravages when the hot weather begins. Perhaps we take them from the house. I know they flourish there, and I do not know if they survive our winters outside. Early and deep planting, rich soil and plenty of water seem to be the requisites for long stems and free blossoming, that is necessary for the market pea. We trench deep, eighteen inches or more, put several inches of manure in the bottom of the trench, plant so the seed will be six inches deep when the trench is filled, but do not cover so deep until it is up, filling in as it grows; trellis, seven feet high, higher if they need it. I like tall vines. They are not so easy to pick but better in every other sense.

With the hot weather come plenty of blossoms, and soon our troubles begin, Blasted buds, mildew and neck drop are the most difficult to overcome. Two or three scorching days will open a whole week's blossoms at one time, and lucky are we if it culminates on Saturday, when everything will sell, for we must take short stems and scant flowers for several days.

Dry weather we can meet with water, or if warm as well as dry you can scarcely give too much; but hot weather, especially if windy, is ruin.

But little land is required for sweet peas, but the labor is endless. During the blossoming season our work begins with daylight, and we pick as many as possible before the sun is hot, rarely picking after ten o'clock except on Saturday, when we make two pickings. Then hoeing, watering, spraying, take the rest of the day. The spring is fully occupied in planting, trellising and cultivating, and the fall is never long enough to clear up, open trenches and get ready for spring.

When I began to sell sweet peas four years ago, the Blanche Ferry was the popular pea here, outselling three to one all other varieties; next year less than a third of my peas will be Ferrys, and my list will contain every good one I know of, probably thirty varieties.

The market here is limited, easily over-stocked, but its worst element is one of our largest growers who sets the price for all the rest, and whose idea of the proper retail price seems to be ten cents a hundred. Her flowers are sold by boys on the streets, and I never know them to ask more than twenty cents per hundred for the first. When we are getting fifty or even twenty-five at wholesale, we naturally dread the appearance of these boys.

Now I have some questions to ask, and hope to get an answer to at least a part of them.

Why do my vines grow best by the stakes that support the trellis? Is it air or water or both? Can I prevent mildew? What causes a whole crop of buds to turn yellow and drop? We expect some blasted buds early when the weather is extremely variable and just after the first full blossoming, but last year I had three rows, about fifteen feet long, of the finest peas I ever saw, bright, clean, thrifty vines, plenty of long stemmed flowers and full of buds. One afternoon I saw that the buds did not look just right, and next morning when picking was finished three-fourths of the buds were on the ground, and the rest nearly all dropped that day. They went right on

forming buds, but for nearly two weeks we picked two bunches a day where we had been getting twenty or more.

What is neck drop? Less than half an inch of the stem, just at the bend, wilts, while the rest stands straight and stiff as ever. Vines that at night promised a fine cut show in the morning sometimes a few, sometimes one-half or three-fourths of the opened or opening blossoms hanging lifeless. It is always the best peas; short stems don't often drop.

Mr. Long: Do you mulch your sweet peas?

Mrs. Eves: I have mulched, but I did not see that they were any better.

Mr. Taylor: What do you use for a trellis?

Mrs. Eves: Oh, almost anything.

Mr. Taylor: Do you change the location every year?

Mrs. Eves: I have been on the land four years, and I have grown them on the same place every year.

Mr. Smith, (Wis.): I have never grown sweet peas or any other kind of flowers for the market, but we always have an abundance of flowers on our place and all the tender annuals. Several years ago I planted sweet peas on a little strip of ground for about four or five years in succession. They kept getting poorer and poorer after the third year, and the last year I planted them there they did almost nothing, the leaves turned yellow and the buds dropped off. So I changed the location and put them in a new place where they had never been grown before, or at least not for quite a number of years, and the result was entirely satisfactory. They grew strongly, and we had an abundance of blossoms all through the season. I think that might, perhaps, be the solution of the falling of the blossoms the lady spoke of.

Mrs. Eves: My best sweet peas were exactly in the same place where they had been growing for four years.

Mrs. Hanson: I have grown mine in the same place for four years. Many people asked me how I managed to grow such fine sweet peas, but they have been grown in the same place for four years. By standing on my tiptoes I could reach the top flowers.

Mrs. Eves: Some of my worst soil had the best late flowers.

Mr. Smith: What is your soil?

Mrs. Eves: We are at a place where all the wash goes in and there is gravel under it; there is gravel within six or eight inches of the surface. In some other places there is clay; there is quite a variety of soil.

Mr. Yahnke: I would like to ask Mrs. Hanson what kind of soil she has.

Mrs. Hanson: I think it is a sandy loam.

APPLE GROWING NORTH OF ST. PAUL.

CLARENCE WEDGE, ALBERT LEA.

(Read before Meadow Vale Horticultural Society.)

Two years of rambling over the state with the Farmers' Institute has given me some ideas on orcharding that may be of value to the planters of Anoka and Sherburn counties. I have found many good and profitable little orchards north of you, and fully believe that on good high land with a clay or limestone subsoil you can easily grow what apples your families need if careful attention is given to avoid the mistakes that are everywhere made.

In the first place, begin with the right kinds. Our state horticultural society is a very safe guide in this matter, and I enclose herewith several of their fruit lists. The hardiest and best of the large apples is the Hibernal; indeed it is the only winter variety that is recommended for general planting, and wherever I have seen it planted it is doing finely. It has borne fruit in Crow Wing county and in Manitoba, as well as in many places all over the southern part of the state. It is a large, handsome fruit, best for cooking and fair to eat out of hand when fully ripened. The tree, in addition to being of first hardiness, is also a very early bearer; trees set out seven years have borne a barrel of apples at my place.

The Duchess is an old standby and should be planted as a mate to the Hibernal. The Wealthy is the finest of northern fruits, but scarcely hardy enough to be largely planted in your latitude. Longfield is almost equal in quality to the Wealthy, and as it bears so very early and so abundantly deserves a small place in the orchard. The Repka is nearly as hardy as the Duchess and a true, hard, all winter keeper. If there was any nursery that had trees large enough to sell I should recommend you to plant some of it.

Among the crabs the Virginia stands at the head with the Martha a close second. Do not plant the Transcendent when you can get so much better kinds at the same price.

Beginning thus with the right kinds, do not fail to give the trees careful cultivation. The idea of leaving orchards in sod is rapidly becoming obsolete with intelligent men. As before indicated, high land with a clay or limestone subsoil is indispensable to the best success, but were I living on a river bottom I should still try a few Hibernal apples and the rest crabs. I now wish to impress one point in the care of the trees with the greatest emphasis: in our dry, clear, western climate the trunks and larger branches should always be shaded. It matters very little what device is used, cornstalks set up about the trees and tied to them with durable twine will answer the purpose perfectly and will last two years or more. If this plan be followed, we should advise using a wrapping of wire netting about the lower part of the trunks before applying the corn stalks, in order to insure the trees against girdling by mice. At our own place we use a wrapping of lath held in place by a weaving of stove pipe wire. This serves as a protection against rabbits, mice and borers, as well as shading the trunks. Do not forget that as the trees get older the larger branches will need the same shade that the trunk of the tree always requires. This idea of shading the trunks of our fruit trees is no fad. The thousands of sunscalded trees to be seen all over Minnesota and the northwest bear abundant testimony to the necessity of providing a cool and grove-like condition for this delicate portion of tree anatomy.

It would be impossible to give anything like complete directions for orchard management in this paper, but I trust that many of your people may become sufficiently interested in their gardens and orchards to impel them to join the brotherhood of tree and fruit lovers in our state horticultural society. The benefits will be large when the cost is considered, and not the least among them will be the satisfaction of knowing that you have done your best to make the old homestead, "Be it ever so humble," the dearest spot on earth to the young hearts that so soon are to go out from it forever.

RECEIPTS FOR HOME COOKERY.

MRS. HANSON, MINNEAPOLIS.

During the hot weather even old housekeepers are apt to become embarrassed over the arrangement of their daily bills of fare. For the summer table, boned chicken and jellied meats of various kinds will be found much more appetizing than the heavier hot meat dishes. Salads and fruits should also have a prominent place on the summer bill of fare.

A delicious summer dessert is made by lining a mould with a strawberry sherbet, and pouring into the center a mixture made from the whites of eggs, powdered sugar and cream, beaten stiff and flavored with vanilla, and then covering the cream mixture with the sherbet until the mould is full. Pack in ice and salt, and serve after it has stood three hours.

LETTUCE AND BEET SALAD.

Boil two medium sized beets and allow them to cool. Have one head of lettuce pulled apart and nicely arranged in a salad dish. Slice the beets in the center of the dish. Prepare a dressing of vinegar, salt, pepper and sugar.

WHITE CAKE.

Beat two cups of sugar and one cup butter to a cream, add one cup of milk and water mixed half and half, three cups flour, into which two teaspoonfuls of baking powder has been sifted, and, last, add the whites of eight eggs. Bake in layers.

CHOCOLATE CAKE WITH MARSHMALLOW FROSTING.

Cream half a cupful of butter, add a quarter of a cupful of chocolate, the beaten yolks of three eggs, one cupful of sugar, one teaspoonful of cinnamon and half a cupful of milk, then the beaten whites of three eggs and a cupful and a half of flour, with three teaspoonfuls of baking powder. Decorate with boiled frosting, to which dissolved marshmallows are added.

Fruit Buds and Twigs which are well developed and full of reserve material are best prepared to withstand very cold weather. Prof. Waugh, of the Vermont Experiment Station, finds that the drying out of fruit buds, if excessive, is disastrous. Some years the evaporation from the buds and twigs is greater than others. It is during such seasons that the loss is greatest from freezing. Twigs covered with lampblack seem to be well protected and open earlier than those not treated. Those covered with whitewash open latest.

NOTICE OF

Summer Meeting,

1900,

OF THE

MINNESOTA STATE HORTICULTURAL SOCIETY.

The regular summer gathering of the society will be held as usual this year at the State Experiment Station, at St. Anthony Park, on Tuesday, the 19th day of June. This date is set to accommodate the rose and strawberry growers in that part of the state most accessible to the place of meeting, and with this object in view a liberal premium list has been prepared.

The general order of exercises for the day will not differ materially from that of similar occasions in previous years. The forenoon will give ample opportunity to those so inclined to look over the experiment gardens and orchards and observe the changes and progress in this interesting and valuable work.

An object of special interest is the new Horticultural Hall, which has been constructed since our last summer gathering there and has been occupied during the past school year.

In the absence of Prof. S. B. Green, who is spending the summer in Europe, his assistant, Mr. R. S. Mackintosh, and others will be in attendance during the forenoon to conduct parties over the grounds and supply any information as to the work of the station desired.

At 12:30 o'clock basket lunch will be spread in Armory Hall, and all attending are invited to contribute towards this festive occasion. Every one is welcome. If not a member, $1.00 will make you such, if you wish, and give you all the publications of the society and a voice in its deliberations.

At 2 o'clock p. m. the regular summer session of the society will be held. The informal program will include several extempore talks on the fruit on exhibition by the exhibitors and others and several papers on appropriate topics, among which may be noted the following: The Army of Flowers, by J. T. Grimes; Growing Mushrooms by an Amateur, F. J. Pracna; School Gardens, O. M. Lord; A Plea for Nature Study drawn from Experience, Mrs. M. M. Barnard.

As usual at our gatherings full opportunity for discussion will be given.

Meeting of the Women's Auxiliary.—The regular summer meeting of this auxiliary society will be held at some convenient time during the day, to be announced.

HOW TO REACH THE GROUNDS.

Take the Como-Interurban electric car in either St. Paul or Minneapolis and get off at Dooley avenue, where carriages will be found in waiting to carry visitors to the grounds, one-half mile distant, from 9:30 a. m. to 1:30 p. m. Those who drive over in their own conveyances will find ample accommodations on the grounds for stabling.

Visitors should NOT take the Interurban car, but TAKE the Como-Interurban-Harriet car.

For further information address

W. W. PENDERGAST, President, Hutchinson.

A. W. LATHAM, Secretary, 207 Kasota block, Minneapolis.

PREMIUM LIST.

All exhibits must be entered with the secretary and in place by 12 m., to be entitled to compete for premiums.

Exhibitors competing must be members of this society and the growers or makers of the articles exhibited. The fruit and flowers exhibited must have been grown in Minnesota and must be correctly labelled.

No premiums will be awarded on unworthy articles.

FLOWERS.

	1st prem.	2d prem.	3d prem.
Each named variety of cut roses, six blooms of each (outdoor grown)	.50	.25	.....
Bouquet of garden flowers	1.50	1.00	.50

FRUIT.

(One quart of each variety.)

	1st prem.	2d prem.	3d prem.
Collection of strawberries	$4.00	$3.00	$2.00
Each named and catalogued variety of strawberries	.75	.50	.25
Seedling strawberry never having received a premium from this society	3.00	2.00	1.00
Each named and catalogued variety of currants	.75	.50	.25
Each named and catalogued variety of gooseberries	.75	.50	.25

VEGETABLES.

	1st prem.	2d prem.	3d prem.
Collection of early vegetables	$3.00	$2.00	$1.00

MUSHROOMS.

(To be collected by the exhibitor.)

	1st prem.	2d prem.	3d prem.
Collection	$3.00	$2.00	$1.00

Your Corner.

Everything is looking favorable for a heavy fruit crop this season.—Clarence Wedge, Albert Lea, May 23.

There is a good prospect for apples and plums, but everything needs rain.—Jno. P. Andrews, Faribault, Minn., May 26, 1900.

Plum blossoms and most of the crab apple blossoms are now fairly out, and apple blossoms are just opening. There is a fair prospect for an immense crop.—E. H. S. Dartt, Owatonna, May 7.

I am very busy. Have put in 800 top-grafts, 4,000 in the ground, and will plant 200 trees. Prospects good for a large crop of apples.—A. J. Philips, West Salem, Wis., May 1, 1900.

My fruit trees look well. I held them back, and they were not injured by frost. They were loaded with blossoms and are filling out well. But raspberries were killed to the ground, except new beds set out last spring; they came out fine. All were covered lightly. Strawberries are all right.—Chas. Kenning, Osceola, May 16, 1900.

Raspberries, both red and black, that were not covered, are dead in the top. The frost apparently did not injure fruit in the least, but most of the plums have dropped off, and many of the cherries and apples. I saw some blossoms on cherries this morning. Ground that has not been stirred is getting dry, while well cultivated ground is moist yet.—S. D. Richardson, Winnebago City, May 22.

I have suffered a most severe loss in apples and plums; hardly three-fourths will survive the shock on account of the hail on the 10th of August, last year. The trees took on a new growth and blossomed again, and even those that fruited blossomed again and kept that up till late in October, till killed by hard frost. Those that may survive will be in a miserable condition.—O. J. Hagen, Hendrum, Minn., April 29, 1900.

Heavy frost May 3; ice one-fourth inch. Early plum was in full bloom. I expect no early plums. But the day after the frost was cloudy and cool; some rain during the day, which may help the blossoms to some extent. I expect no very early plums. All trees are full of blossoms. Grafts set last spring are mostly in bloom. Apple trees seem to be in good condition, full of blossom. All raspberries are winter-killed to some extent. Bare ground all winter. I had one sleighride all winter.—Martin Penning, Sleepy Eye, May 5.

We had a splendid drive of twelve miles into Watonwan county yesterday, and I was surprised to note the growing interest in tree planting by farmers and people in the villages. Nearly everyone has a fine grove started about the buildings, with the plantings well made and arranged to give the best protection where most needed. The trees are planted with cultivated crops and given intelligent care, such as our Horticultural Society teaches, and is encouraging all over the state.—A. K. Bush, Farmers' Institute, St. James, Minn., May 29.

Bad Luck in the Red River Valley.—My trees stood the winter better than I expected after the wrecking they got last August 10th, but with the warm, dry winds and drouth of this spring leaves began fading away and blossoms wilted, and those trees that showed some vigor were destroyed under a "cataract of wood splitters and post hole borers," called hail, on Sunday the 13th inst. Out of over 200 plum trees not a single tree is alive. Currants, gooseberries and sand cherries are all dead—old and young trees all alike. The Crandall currant is one of the strongest to stand a good whipping, and some of the crabs and apples stand also a good deal, such as Lieby, Charlottenthaler, Hibernal, Patten's Greening, Virginia, Greenwood, Arctic, Florence, Striped Anis and Early Strawberry.—Ole J. Hagen, Hendrum, Minn., May 22.

NOTES ON MAY HORTICULTURIST.

Mr. Patten strikes the key note of top-working when he quotes the words of Wilder, and when he says owing to expense this work should be done by experiment stations—I often wish they were liberal enough to give more attention to it.

I have some lessons in my orchard this season that are worth miles of travel to a fruit grower to see, and I had some started at Wausau, which were they carried out and reported on properly would be very valuable. One tree, at home, in particular, I call New Wealthy. It grew in a Wealthy row, and to all appearance is a Wealthy. One scientific man says it is a sport of the Wealthy. Still the fruit is different, and if anything is handsomer than the Wealthy. But I cannot say as to quality as it only bore five apples the first year, and they were stolen at the La Crosse fair, and last year it bore about one dozen, which were stolen from the tree; but I will watch it close this year. It top-works wonderfully on the Hibernal, one tree of which was girdled by mice last winter. I have it preserved to show if I go to fairs or winter meetings this year.

I dislike to criticise Uncle Dartt when he is not present to talk back, but he says, page 168, that we can just as well grow a stock hardy enough as to top-graft. Now hardiness is not all we are after. Some of our hardiest trees are lacking in vigor, and vigor and strength to grow a top and produce fruit is what I am after. Obstructing the sap of the Virginia does not make the Wealthy bear earlier, but working Wealthy on Virginia certainly makes it bear more years.

I am glad you published the beautiful picture of Dartt's pond, and that you called it a park. At your meeting I called it a dam, and that sounded rough. The picture looks natural, though the bathers were not in when I was there in December last—but the houses and rafts were there. My imagination says that if the artist had extended the view one inch farther to the left that Dartt could have been seen sitting in his buggy with old John hitched to it, or sitting in his big chair, giving orders and wishing he was younger so he could build more dams.

Am glad Prof. Green had a chance and has improved it to go to Europe —only wish he had taken me with him. I believe it would have been money well invested, at least for me. Before I stop I must say that I admired your cut of the home of Mrs. Bonniwell. It is to me an evidence of kindness in that family in arranging the group for the artist gave the faithful dog such a prominent place, and I can almost hear the old lady tell him to keep still. Her biography is interesting and worthy the place you so kindly gave it.—A. J. Philips, West Salem, Wis.

Secretary's Corner.

SUMMER MEETING, WIS. HORT. SOCIETY.—This society is to hold its regular two days' summer session at Wausau, Wis., June 20-21. As this is the location of their new trial orchard, one day, Thursday, is given to its examination and consideration.

LARGE APPLE PLANTINGS.—Ex-Pres. Underwood, of Lake City, has planted another side-hill orchard of 1,000 trees. From all directions word comes of an unusual amount of apple planting this spring. Minnesota should soon grow her own apples at the present state of increase.

ARE YOU GROWING STRAWBERRIES?—If you are be sure and pick your best quart of each variety and bring to the summer meeting. It will be a *great day* to the berry growers. A first, second and third premium offered for each named variety. How many kinds can you bring?

NOTICE OF SUMMER MEETING.—Do not fail to see the notice of the annual summer gathering of this society, to be found elsewhere in this number. As near as possible the date has been set to catch the height of the strawberry season. But there is some guess work about this, and we may miss it a little. As usual we meet at the Station. Come and bring your berries!

IRRIGATION IN FRUIT GROWING.—The U. S. Dept. of Agriculture has just issued "Farmers' Bulletin No. 116," devoted to this topic. It is a brief but very practical treatise on the various phases of the subject, accompanied by illustrations and many suggestions drawn from experience. All interested in this subject would do well to secure this bulletin, which can be had gratuitously upon application to the Department.

BEES AND HORTICULTURE.—Under the above title Eugene Secor, of Forest City, Ia., has brought together in a twelve page pamphlet many interesting facts as to the relation of bees to horticulture and makes out a very good case as to the necessity of the one with the other for the success of either. This pamphlet is published by the National Bee-Keepers' Association, of which Mr. Secor is general manager and treasurer. It is worth very careful study.

SUMMER INSTITUTES.—The Minnesota Farmers' Institute is again at work, divided into southern and northern corps. The itinerary of the southern corps shows twenty-one meetings in the month from May 22 to June 22. Mr. Bush is "talking" horticulture with this corps. The good fruit prospects in the part of the state in which this institute corps is working will render the soil more fertile for his tillage. We expect to hear good things of him.

FRUIT PROSPECTS.—Under date of May 21st, the Weather Bureau reports for Minnesota "It is found that plums, cherries and currants were somewhat injured by the frosts early in the month, and that the set of fruit was reduced. The apples were not in full bloom at the time of the frosts, and they seem to be in good condition." This statement agrees with the information which has reached the writer through other channels. The prospect for the apple crop so far may be called "good."

THE NURSERYMEN OF MINNESOTA.—There is now in the possession of the secretary a list of forty-eight names of persons or firms who, it is understood, are engaged in the nursery business in Minnesota. A circular is about to be sent out to them, and if filled out properly and returned with permission to

give the facts called for to the public, it is the intention to issue a state nurserymen's directory, that will give the information our planters would like to know in regard to those who are asking their patronage. It is hoped the list may be a complete one. It will be a good, if gratuitous, advertising medium.

PREMIUMS ON FRUITS AND FLOWERS.—For purposes of preservation and convenient reference, there has been printed in this number an extract from the 1900 premium list of the Minnesota State Fair, comprising the premiums offered on fruits and flowers. Our readers should give this careful study, and then turn back to the regulations of that department published in the May number and become familiar with the work of the fair. Then, at this early date, make entries of whatever you are likely to have for exhibition and plan for it as necessary for some time ahead. It will pay you.

STATE FAIR PREMIUM LIST.—The premium list for our coming state fair is out and being distributed. It is the intention to send a copy to each member of this society, and if any have been overlooked one can be secured by addressing Secretary E. W. Randall, Hamline, Minn.

On page 52 will be found the department of fruits and flowers, and it will be found very interesting reading to all prospective exhibitors, as all producers in the state should be. Bring to this fair something as your contribution to the "best fair on earth."

LIST OF THOSE SENDING NEW MEMBERS IN MAY:

J. P. Andrews, 7.
C. Revier, 1.
Wm. Beck, 1.
I. Abrahamson, 2.
T. E. Cashman, 1.
C. E. Older, 2.
J. E. Dodds, 1.
Chas. Kenning, 1.
S. D. Richardson, 1.

THE 1900 MEMBERSHIP ROLL.—At this date May 25, the annual membership roll of the society numbers 720, which is 116 more than it numbered a year ago today. The present life and honorary roll numbers 90, making a total roll at this time of 810. By natural process this roll will increase during the year yet somewhere near 100, which will bring it very near the coveted 1000. With a little effort on the part of our members, it can easily be brought up to this crowning mark. Will not *you* send in one or more new members?

Of this number of members 96 live outside the state, from Maine to Alaska —and all along between. Thirty-eight are ladies; not a bad showing, but we wish there were more. A hundred more of the gentler sex added to our list would bring about a marked change in the character of our work and for its good. We should have them.

John H. Stevens, of Minneapolis, vice-president of this society, old time life member and friend most tried and true, is dead. He passed away at his home in this city peacefully on the afternoon of Monday, May 28, 1900, and his body was laid at rest in beautiful Lakewood Cemetery on the afternoon of Decoration Day, May 30. We shall see his kindly and inspiring face no more, but his memory is ever with us. Had he survived till June 13, he would have rounded out a full four score years. On May 1 last, he and Mrs. Stevens, who survives him, celebrated the golden anniversary of their wedding.

MISS SARA M. MANNING.

Late of Lake City, Minn.

(See Biography.)

THE MINNESOTA
HORTICULTURIST.

VOL. 28. JULY, 1900. No. 7.

In Memoriam.

MISS SARA M. MANNING,

LAKE CITY, MINN.

DIED APRIL 7, 1900, AGED 46 YEARS.

Miss Sara M. Manning, for many years an honorary life member of this society, died suddenly at Lake City, Minn., on April 7, 1900, from heart failure, in the forty-seventh year of her age.

Miss Manning was born at Reading, Mass., April 25, 1853, from old New England ancestry.

We are told that William Manning came from England in 1635 and settled at Cambridge, Mass., where he purchased an estate. His son William inherited the property and became a very prominent citizen. He was a merchant, an owner of shipping and of warehouses and wharves. He was for fifteen terms selectman of his town and also served as a member of the general court, or legislature, of Mass. In 1669 he was sent to England as a committee to induce Uriah Oakes to come to Cambridge and preside over the church. Mr. Oakes afterwards became president of Harvard College. For his services to the church William Manning received a grant of land from the church at Billerica, Mass. His son Samuel moved to Billerica and in 1696 built a house there. The house must have been well built, for it is still standing and is occupied as the summer home of Warren H. Manning, the eminent landscape architect and secretary of the American Park and Outdoor Art Association. Samuel Manning was a member of the legislature, and it is from one of his fourteen children, William, that Miss Manning was descended. William Manning served in the French and Indian War and received the title of Ensign. His grandson, Jacob, served in the Revolutionary War. He was at Concord in 1775, where the unbattled farmers "fired the shot heard round the world," and received the title of Lieutenant. His grandson Solomon Manning purchased a farm at Bedford, N. H., in 1823 and married Mary Fletcher. It was here that Miss Manning's father, Joseph Manning, was born and brought up. He married Oct. 25, 1849, Miriam Noyes Hall and engaged in business at Reading, Mass.

Miss Manning's maternal grandfather, Ebenezer Hall, was descended from John Hall, who was born in England and came to Cambridge in 1652, moving to Medford soon afterward. His son Percival was one of the original proprietors of Sutton, a deacon in the church and a member of the

provincial legislature of New Hampshire. Miss Manning's maternal grandmother was Jane Noyes, who was descended from Rev. James Noyes, one of the first settlers of Newbury, Mass., and a son of the Rev. William Noyes of Wiltshire, England. The family was eminent in preachers and teachers, and it is partly from these that Miss Manning inherited her strong religious nature.

Jacob W. Manning, a brother of Joseph Manning, established in 1854 the well known Reading (Mass.) Nursery. He is a man of wide reputation in horticultural circles, an honorary life member of this society and a member of the American Pomological Society. The catalogues issued by his nursery possess a scientific value, unusual in publications of this kind. His sons, Warren H. Manning and J. Woodward Manning, have become landscape architects of national reputation.

A cousin of Joseph Manning was for a long time pastor of the historical Old South Meeting House in Boston.

In 1856 Joseph Manning disposed of his business in Massachusetts and moved west, settling first at Pepin, Wis., and afterwards removing to Lake City. Miss Manning always made her home with her parents, and she passed nearly her whole life in the Lake Pepin valley. It was in 1871 that she taught her first and only term of country school. In the fall and winter of 1874 and 1875 she attended Carleton College, at Northfield, but her ambition led her to undertake to do two years' work in one, and her health failed. She was obliged to give up school work, and her physician advised her to lead an out-door life. It was at this time that she began the study of botany with the Misses Robinson, teachers in the Lake City high school. Her father's business took him much into the country, and it was her custom to go with him on his longer drives, eagerly searching for new plants and flowers.

At the winter meeting of the Minnesota Horticultural Society in 1884 Miss Manning read a paper on "The Wild Flowers of the Lake Pepin Valley," and there was published with it in the reports of that year a catalogue of 504 species of flowering plants found growing in the Lake Pepin Valley. This catalogue represented a large amount of hard work that only a botanist can appreciate. It was almost a pioneer list of the Minnesota flora.

In the same year Miss Manning assisted Prof. Warren Upham in the preparation of his "Flora of Minnesota," published in the Twelfth Annual Report of the Geological and Natural History Survey of Minnesota.

At the winter meeting of our society at Owatonna in 1892 Miss Manning read a paper on "Our Native Shrubs" and at the following summer meeting a poem on "Our Beautiful Wild Flowers." These papers all showed that she possessed the spirit of a true artist and that she had a rare appreciation of natural beauty. The writer well remembers a drive made with her as guests of the Minneapolis Park Board along Hennepin Boulevard by Lake Calhoun and down Minnehaha Creek. We had been shown the best work that the landscape gardener was capable of, but it was not until we came out on the drive along Minnehaha creek and saw nature's own inimitable planting that Miss Manning gave expression to her enthusiastic approval.

Miss Manning was made an honorary life member of our society in 1884. She became a member of the American Association for the Advance-

ment of Science at about the same time and for many years was a faithful attendant at the annual meetings, devoting most of her time to the botanical section. It was there that she made the acquaintance of Prof. Underwood, Thomas Meehan and other botanists.

She was with Dr. Gray at the time he discovered the rare fern, Schizaea pusilla, in the pine barrens of New Jersey.

Miss Manning became a member of the Congregational church at Lake City in 1872 and was for many years a faithful worker, teaching in the Sunday school until her health failed. She was a charter member of the Christian Endeavor Society and for three terms its president. Theological controversy had no attractions for her, but she believed in exemplifying the will of the Master in her daily life. She saw the good, the true and the beautiful in the world and recognized in it the handwriting of God. She often quoted with approval these lines of Horace Smith:

"Were I, O God! in churchless lands remaining,
Far from the voice of teachers and divines,
My soul would find, in flowers of thy ordaining,
Priests, sermons, shrines!"

Her cousin Warren H. Manning, who knew her well, says: "My cousin was a student always, a lover of art and of nature, always more thoughtful of others than of herself, never strong but always at work."

Her herbarium was a very complete one of the plants of her region, and she discovered a number of rare ferns and plants out of their natural range."

There has passed on a pure and beautiful soul; one whose life touched, helped and strengthened other lives. This is a better and more beautiful world because she lived in it; yet the good she did was done as most good is done, unconsciously.

L. R. MOYER.

Shallow Planting for Sweet Peas.—The sweet peas were planted near the top of the ground, not in a deep trench as formerly. Then after they began to run, I sifted the ashes from the kitchen stove (part coal and part wood) by the side of the row every morning until the ashes were about 6 in. deep, from the row of sweet peas to the row of potatoes on each side. These kept the roots cool and damp, and we never saw such thrifty sweet pea vines and large blossoms. The row was 16 ft. long, and a large bunch was picked nearly every day from July 4 to Oct. 1. The vines got about 18 in. above the 6 ft. wire and then fell back. For the last five weeks it was necessary to use a chair to stand on to pick.

The Wooden Tree Wrapper is the Best.—I have used many thousands of them, and the more I use the better I like them. They cost about $2.50 to $3 per thousand. They are put on when the tree is planted and left there during summer and winter. They are removed once a year so that the tree can be whitewashed.

Summer Meeting.

1900.

MINNESOTA STATE HORTICULTURAL SOCIETY,

MISS EMMA V. WHITE, MINNEAPOLIS.

The meeting occurred at the State Agricultural School grounds, St. Anthony Park, on June 19, a somewhat earlier date than usual, but selected to accommodate the strawberry crops in the vicinity of the Twin Cities. In the absence of Professor Green, who is spending the summer abroad in the interests of horticulture, his assistant, Mr. R. S. Mackintosh, escorted the visitors about the grounds, and Dean Liggett, with Professors Hays, Reynolds, Brewster and Shaw and others served also as hosts and helped to make the day enjoyable and profitable to the many interested and inquiring observers.

As is the custom, the morning was spent in survey of the grounds and buildings with their diversified interests, in social greetings and converse of friends, many of whom see each other only at this yearly gathering, with the usual interest centering about the exhibits of fruit and flowers. The exceedingly dry season affected the exhibits somewhat in quality though not much in quantity, as there were displayed in the neighborhood of 150 plates of strawberries and a few of currants and gooseberries. Dr. Mary Whetstone had a nice show of mushrooms, displaying some ten or fifteen edible varieties, and the Jewell Nursery filled a table with their beautiful roses, but the crowning exhibit of the day was that of Mr. R. H. L. Jewett, who showed forty-eight varieties of strawberries, raised on his fruit farm at Faribault. Between three and four hundred in attendance were served at a bountiful lunch, superintended by the Farm School people, who supplemented the baskets of the visitors by delicious coffee, lemonade, strawberries and cream and a plentiful supply of sandwiches.

At 2:30 the guests gathered for the literary part of the feast, President Pendergast occupying the chair and opening the program in a few felicitous words of greeting. Mr. R. H. L. Jewett was called upon to give a talk on strawberries, and he responded by showing a number of varieties, speaking of their special characteristics somewhat as follows:

"The Aroma is quite prolific, uniform in size and holds up well in chipment, and has done better this year than last. The Jerry Rusk, named after the secretary of agriculture, is a good show berry, but not so good for commercial purposes. The Manwell, much prized in Iowa, has not done so very well. Perhaps it will improve with irrigation. The Edgar Queen has been satisfactory in size and abundance of crop, but is not so good a commercial berry as some others, as it does not ship well. The Ruby has a great reputation in some parts of the country, but here it does not do so well, and is not good for commercial purposes. It does not ripen at the tips. The Star also has a great reputation in some parts. Here it is small, almost like a wild berry. The Ridgeway, an Indiana berry, is doing well here. It holds

its crop well, lasting throughout the season. The Kyle is a light colored, not very acid berry. It has given a good crop, nearly all of good size. The Clyde is one of the best market berries, although rather soft for a long shipment. Otherwise it is a very good commercial berry. Splendid is one of the best. It ships well and bears from the earliest to the latest of the berry season. 1,000 is one of Crawford's leading berries. It is dark, solid and very good. Louis Gauthier is a French berry, almost white, of high flavor, and a very fine berry. Jewett's Seedling bears a large, well colored fruit. It shows a little soft, but gives much promise."

Questions in regard to watering, brought out the fact that Mr. Jewett has an irrigating plant. He pumps the water by means of a gasoline engine from a lake into a reservoir, distributing it through three inch pipes by means of ditches. His soil is a black loam, with a good mixture of sand and a clay subsoil. From a 4½ inch cylinder, with a 10-inch stroke, he can pump from 1,000 to 1,200 barrels a day. His strawberry patch has had two waterings this season. The best time to water first is when the fruit begins to form.

In reply to the question, what varieties are the best for Minnesota, Wm. Lyons said, "The Clyde yields the best; the Enhance stands the drouth best." Gus Johnson has found the Dr. Stamen and Brandywine doing the best for him.

Professor Shaw asked what could be recommended for a farmer who wanted to raise but one variety, a variety that is hardy, strong and vigorous, a self-fertilizer, and prolific. The Bederwood, Splendid and Brandywine were mentioned by different ones. Mr. Harris would get out of the difficulty by having all three of these,—the Bederwood because of its prolific yield, Splendid because of its long bearing season and ability to endure drouth, and the Brandywine because it has such a fine flavor and is the best for canning purposes.

Mr. J. M. Underwood, in response to a call from the president, gave in his usual interesting and forceful style, an account of a recent trip to California. What he had to say about the orange crop and about irrigation was of the most interest to horticulturists. The orange crop is harvested from the middle of December to the middle of April. He was there to see this fruit brought in great four-horse wagon loads, and when packed filling train after train, answering the query he had made on his outward journey: why so many lines of railroad over the desert? Those oranges that come from the coast regions all have to be washed, as the fruit being more or less damp from the fogs gathers dust and becomes so black and grimy that it is in no fit condition to ship until cleaned. Several fruit farms are watered from one irrigating plant. One that was noticed in particular had a well 135 feet deep, with sixty feet of water. The well was six inches in diameter. The water is pumped through a five-inch cylinder, extending eight feet in the water, at the rate of 2,500 gallons an hour. The owner of the plant gets twenty-five cents an hour for furnishing the water. Deciduous tree fruits do not need artificial irrigation as much as the orange and other citrous plants.

The points of greatest interest to Mr. Underwood, in addition to those mentioned, were the mountains, with a special trip up Mt. Wilson, the sea gardens viewed from Catalina island, where one can see the curious and

varied vegetation at the bottom of the ocean, and a further ocean journey to visit the sea lions.

Mr. A. F. Braton responded somewhat at length to Mr. Underwood's graphic account by showing in a forceful manner the opposite side of the picture, relating about all that is to be said of the disadvantages of California as regards climate, products and commercial outlook, fortifying his statements by liberal quotations from an old Minneapolis resident.

The program was further carried out by papers from F. J. Pracna, Minneapolis, on "Growing Mushrooms by an Amateur," "A Plea for Nature Study in the Public Schools, Drawn from Experience," by Mrs. M. M. Barnard, Minneapolis, and "School Gardens," by O. M. Lord, Minnesota City, all of which will elsewhere be given in full.

On account of the lateness of the hour Mr. J. T. Grimes, at his own request, was reluctantly excused from the reading of his paper "The Army of Flowers." He will present it at a future meeting.

Professor Shaw was questioned in regard to the visit of the children to his garden, as described by Mrs. Barnard, and said in part:

"The work was to me a revelation. The strangeness of the request almost startled me—that I should talk to the children on gardening, but I have been a thousand times thankful that I did so. I had some misgivings, as some apparently did not know the difference between a potato and an onion. One, pointing to the potato plants, asked me if they were onions. Though I thought it would be a difficult matter to talk to the children, I never had a more sympathetic audience. After the very first word they were captured. The used their note books, and asked me many questions in regard to the work. One of the most pleasing features is the many letters I have since received from my visitors. One of those schools has sent me ninety letters, in which the pupils thanked me for the trouble I took in talking to them. Some went over and gave almost verbatim what I had told them. I would not take silver or gold, or even diamonds, for these letters. Another feature which gratified me very much was the often expressed desire to attend the school of agriculture. Heretofore the exodus has been from the farms to the city. Here is an idea, which if properly worked, may change the tide from the city to the country. The thanks of the public are due to the Minneapolis Improvement League, and to Mrs. Barnard in particular, for the advanced work which they have done in this matter."

Professor Hays spoke of the work he is inaugurating in preparing leaflets to aid in introducing the study of agriculture in the country schools of North Dakota. These contain models of gardens, with much elementary and practical instruction. There will be opportunity later of reporting this work more fully.

Just before adjournment, Mr. Underwood reported for the committee appointed to consider the project of a memorial to Peter M. Gideon. They made recommendation as follows:

That this society raise a fund of $1,000, to be called "The Peter M. Gideon Memorial Fund for the Promotion of Education in Horticulture;" that the fund when completed be handed over to the Board of Regents of the University of Minnesota to be administered in trust for the following purpose: The interest only of this fund (the principal to remain intact) to be offered in suitable premiums to the members of the class or classes in horti-

culture in the Minnesota School of Agriculture for those pupils whose standing and attainments through the school year shall entitle them thereto, the awards to be made upon such conditions and under such circumstances as a board consisting of the Dean of the Minn. School of Agriculture, the professor of horticulture in said school and the president and chairman of the executive board of the Minnesota State Horticultural Society, may from time to time decide.

The meeting came to a reluctant close at five o'clock.

AWARD OF PREMIUMS, SUMMER MEETING, 1900.

STRAWBERRIES.

ARTICLE AND EXHIBITOR.	PREM.	AMT.
Enhance, W. H. Brimhall, St. Paul	3	$ .25
Bederwood, W. H. Brimhall, St. Paul	3	.25
Splendid, W. H. Brimhall, St. Paul	2	.50
Bederwood, T. Redpath, Long Lake	2	.50
Lovett, T. Redpath, Long Lake	2	.50
Walker, T. Redpath, Long Lake	1	.75
Walker, S. R. Spates, Long Lake	2	.50
Lovett, S. R. Spates, Long Lake	3	.25
Splendid, H. F. Busse, Mpls	1	.75
Brandywine, J. G. Bass, Hamline	2	.50
Dr. Stamens, Gust Johnson, Excelsior	2	.50
Gandy, Gust Johnson, Excelsior	2	.50
Warfield, H. H. Pond, Bloomington	1	.75
Countess, H. H. Pond, Bloomington	1	.75
Brandywine, F. F. Farrar, White Bear	3	.25
Bismark, F. F. Farrar, White Bear	1	.75
Isabella, F. F. Farrar, White Bear	1	.75
Crescent, Wm. Lyons, Mpls	1	.75
Lovett, Wm. Lyons, Mpls	1	.75
Clyde, Wm. Lyons, Mpls	2	.50
Sample, Wm. Lyons, Mpls	1	.75
Enhance, Wm. Lyons, Mpls	2	.50
Crawford, Wm. Lyons, Mpls	1	.75
Brandywine, B. T. Hoyt, St. Paul	1	.75
Enhance, B. T. Hoyt, St. Paul	1	.75
Bederwood, B. T. Hoyt, St. Paul	1	.75
Collection, Wm. Lyons, Mpls	1	4.00
Kyle, R. H. L. Jewett, Faribault	1	.75
Seaford, R. H. L. Jewett, Faribault	1	.75
Gardner, R. H. L. Jewett, Faribault	1	.75
Ridgeway, R. H. L. Jewett, Faribault	1	.75
Haverland, R. H. L. Jewett, Faribault	1	.75
Staples, R. H. L. Jewett, Faribault	1	.75
Dr. Stamen, R. H. L. Jewett, Faribault	1	.75
Magoon, R. H. L. Jewett, Faribault	1	.75
Commander, R. H. L. Jewett, Faribault	1	.75
Brunette, R. H. L. Jewett, Faribault	1	.75

ARTICLE AND EXHIBITOR.	PREM.	AMT
Mexican, R. H. L. Jewett, Faribault	1	.75
Splendid, R. H. L. Jewett, Faribault	3	.25
Pet, R. H. L. Jewett, Faribault	1	.75
Muskingum, R. H. L. Jewett, Faribault	1	.75
Early Sunrise, R. H. L. Jewett, Faribault	1	.75
Star, R. H. L. Jewett, Faribault	1	.75
Arnout, R. H. L. Jewett, Faribault	1	.75
Warfield, R. H. L. Jewett, Faribault	3	.25
Margaret, R. H. L. Jewett, Faribault	1	.75
Ruby, R. H. L. Jewett, Faribault	1	.75
Bubach, R. H. L. Jewett, Faribault	1	.75
Glen Mary, R. H. L. Jewett, Faribault	1	.75
One Thousand, R. H. L. Jewett, Faribault	1	.75
Ocean City, R. H. L. Jewett, Faribault	1	.75
Wolverton, R. H. L. Jewett, Faribault	1	.75
Seedling, R. H. L. Jewett, Faribault	1	.75
Clyde, R. H. L. Jewett, Faribault	1	.75
Arrow, R. H. L. Jewett, Faribault	1	.75
Benoy, R. H. L. Jewett, Faribault	1	.75
Louis Gauthier, R. H. L. Jewett, Faribault	1	.75
Snowball, R. H. L. Jewett, Faribault	1	.75
Gandy, R. H. L. Jewett, Faribault	1	.75
Bismark, R. H. L. Jewett, Faribault	1	.75
McKinley, R. H. L. Jewett, Faribault	1	.75
Edgar Queen, R H. L. Jewett, Faribault	1	.75
Warfield, C. W. Sampson, Eureka	2	.50
Seabury, C. W. Sampson, Eureka	1	.75
Manwell, R. H. L. Jewett	1	.75
Aroma, R. H. L. Jewett	1	.75
Weston, R. H. L. Jewett	1	.75
Sample, R. H. L. Jewett	1	.75
Mele, R. H. L. Jewett	1	.75
Bissel, R. H. L. Jewett	1	.75
Gem, R. H. L. Jewett	1	.75
Rio, R. H. L. Jewett	1	.75
Jerry Rusk, R. H. L. Jewett	1	.75
Nic Ohmer, R. H. L. Jewett	1	.75
Carrie, R. H. L. Jewett	1	.75

W. L. PARKER,
CLARENCE WEDGE,
Judges.

CURRANTS.

L. B. Holland, W. H Brimhall	1	.75
Champion Black, W H. Brimhall	1	.75
Black Naples, W. H. Brimhall	1	.75
Stewarts, S. R. Spates	1	.75
Fay, S. R. Spates	1	.75
Red Dutch, S. R. Spates	2	.50
White Grape, S. R. Spates	2	.50

ARTICLE AND EXHIBITOR.	PREM.	AMT.
Stewart, T. Redpath	2	.50
Victoria, T. Redpath	2	.50
Red Dutch, T. Redpath	1	.75
White Dutch, T. Redpath	2	.50
Fay, G. Johnson, Excelsior	2	.50
Victoria, G. Johnson	1	.75
White Grape, G. Johnson	1	.75
White Dutch, G. Johnson	1	.75
Cherry, G. Johnson	2	.50
Cherry, C. W. Sampson	1	.75

J. S. HARRIS,
J. T. GRIMES,
Judges.

GOOSEBERRIES.

Pearl, S. R. Spates	2	.50
Red Jacket, S. R. Spates	2	.50
Red Jacket, W. L. Parker, Farmington	1	.75
Champion, W. L. Parker	1	.75
Downing, Gust Johnson	1	.75
Houghton, Gust Johnson	1	.75
Smith's Improved, Gust Johnson	2	.50
Downing, C. W. Sampson	2	.50
Pearl, C. W. Sampson	1	.75
Smith's Improved, C. W. Sampson	1	.75
Houghton, C. W. Sampson	2	.50

J. S. HARRIS,
J. T. GRIMES,
Judges.

FLOWERS.—ROSES.

Multiflora, J. G. Bass	2	.25
Crimson Rambler, E. V. White	1	.50
Ruby, Wm. Lyons	2	.25

MRS. D. F. AKIN,
Judge.

VEGETABLES.

Collection, Paul Burchlaff, St. Paul	2	$2.00
Mushrooms, Dr. Mary Whetstone, Mpls	1	3.00
Mushrooms, H. A. Strong, Mpls	2	2.00

J. S. HARRIS,

Pollenizing Strawberries.—At the Wisconsin Experiment Station, Prof. Goff found that when Warfield was pollenized by Michel's Early, an early bloomer, 69 per cent of the total crop was gathered in the first six pickings. When the same variety was pollenized by Parker Earle, a late bloomer, only 56 per cent of the crop was gathered in the first six pickings. He also showed that during two seasons rows pollenized by early blooming varieties produced fruit somewhat larger than those pollenized by rows of late blooming kinds. These results are not conclusive, but are interesting.

LETTER FROM PROF. S. B. GREEN. RECEIVED JUNE 8, 1900.

Giessen, Germany, May 28, 1900.

The weather since our arrival has most of the time been quite cold and cloudy. We arrived in Bremen on the 16th of May, after a rather longer passage than usual, owing to rough weather.

This country is not a paradise for the fruit grower or forester. It is very liable to late spring frosts, and June frosts are frequent. A frost here the 19th of May froze back all the new growth on oaks, beech and other frost-tender trees and froze cherries on the trees. The flowers of apples and pears were also severely injured and often destroyed. I learn that along the Rhine they have not had a good crop of grapes for five years. However, when they do get a crop it is very profitable, and it is said that one good crop in seven years makes the grape business a profitable one. Considerable fruit is grown in this section, but, as a rule, the orchards are small and look much neglected and generally are in grass. This is, however, a great country for shrubs and trees that are adapted to it. Just now the beautiful, hardy vine, Chinese wistaria, is gorgeous with purple flower clusters, and the shrubby and almost tree-like laburnum is gorgeous with great yellow flower clusters. The European linden is much used as a street tree and is exceedingly pretty, but I think our linden is a better looking tree in Minnesota and that we do not use it enough.

In Bremen I was particularly impressed with the pretty appearance of the new town. Formerly a moat went around the town, which, when of no further use, was partly filled up and was very unsightly. Some one conceived the idea of treating it artistically, with the result that it forms a most beautiful feature of the town, and many fine residences front on it. It has been treated as a long, narrow lake or river and most beautiful effects brought out by suitable planting.

Here, and frequently elsewhere in Germany, in the newer portions of the cities the houses are set back a little from the street, sometimes not more than six feet, but more often twelve to twenty feet, but the space in front is always neatly planted with shrubs and herbaceous plants. These are often trimmed into some regular form and probably from the artistic standpoint should perhaps frequently be condemned, but the effect as a whole is very pleasing, especially when taken in connection with the effect of the potted plants that one sees in every window. Here, and elsewhere in Germany, it is not uncommon to see shrubbery used in front of houses in place of grass and the effect is good where high steps are necessary to reach the front door, but when the door is not above the tops of the shrubs, the effect is not pleasant. For the fronts of dwellings it is customary to cut the shrubs back occasionally so as to keep them rather short.

We stopped over Sunday at Koln and, of course, visited the cathedral. At Bonn we spent parts of two days visiting the agricultural school there, which is a very good one and has about 300 students. The work along animal feeding was very interesting, but, of course, I was most interested in the botanical garden and the fruit garden. Cytisus Adami was here in full flower. This is a very beautiful plant belonging to the pea family, and is now gorgeous in yellow flowers, but the chief interest in it centers in its being considered a cross between two species and the characteristics of

each show in the flowers of this tree. It is not uncommon to see on a good specimen that appears perfectly yellow at first sight a few branches, or even buds, bearing lavender flower clusters, and on the same branch alternate flower clusters may be of different colors.

In Bonn we visited the house where the great musical composer, Beethoven, was born. It is now preserved as a museum and is quite an humble affair. Here is, perhaps, the finest avenue of horse chestnuts to be seen in the world. It is known as Poppelsdorfer Avenue. It consists of two rows of trees on each side of a grass plat about 200 feet wide. The avenue must be at least a mile long and leads from the town to the botanical garden and the agricultural school and is exceedingly well kept up.

From Bonn we went up the Rhine to Bingen and Rudesheim, and to Weisbaden, where we passed the night. Here we saw the kaiser. He is a sensible looking man and much better than his pictures represent him to be. This is a fashionable watering place and very beautiful and noted for its hot springs, which are celebrated for their curative properties for rheumatism and gout. My wife had thought that perhaps she had better remain here instead of in Heidelberg, as we planned, while I was in the Black Forest country, but a drink of the water convinced her that the remedy was worse than the disease, and we went on as planned. The water is about lukewarm and tastes of common salt and perhaps medicinal salts or Glauber's salt. I felt something as it has been said that Nebuchadnezzar felt when turned out to grass: "and murmured as he cropped the unwonted food, 'It may be wholesome, but it is not good.'" I had rather cure my rheumatism by a good sweat than at Wiesbaden. I have gotten many notes of interest that I propose to work over for the Horticulturist when I have a little time, but at present I am too busy to do the subject justice. I have left Mrs. Green in Heidelberg for ten days while I am in the forests and am now spending my time walking and note-taking in the forests with a party of seven students in forestry who are here with Dr. C. A. Schenck, the forester of the Vanderbilt estate. Mr. E. L. Reed, of Anoka, with his son and Prof. Mason, of Berea, Ky., are also in the party. When through here we go from Carlsruhe to Munich, where are very interesting forests. I think I shall be able to write you again before the horticultural meeting comes off. But in any event, I want to be remembered to the society, with best wishes for a cordial hand-shake in the spirit for each and every member and to our interested guests. I hope the meeting will be a delightful one and would like much to be with you. Cordially and faithfully yours,

Samuel B. Green.

P. S.—In Giessen is a celebrated forestry school, in which I am much interested, and we have received many courtesies from the professors and students. We have been here two and one-half days and now go to Alsfeld.—G.

The Striped Cucumber Beetle is most effectively controlled by the use of Paris green when the insects are on the surface of the leaf. Kerosene emulsion and pyrethrum have been used with good results. The wild cucumber can be planted as a trap crop, as the beetles seem to be very fond of it.

THE RAISING OF MUSHROOMS.

F. J. PRACNA, MINNEAPOLIS.

The toothsome fungi, highly loved by all epicures all over the world, is what I wish to talk about—their culture from what I have learned through my own experience.

As there are more than four hundred different varieties of mushrooms, I will just devote myself to the culture of the Agaricus Campestris (the meadow mushroom), with which I have had some experience, and which is the only one, so far as I know, that can be commercially cultivated.

Mushrooms require a dry and frost-proof place where there is some light, moderate temperature and freedom from draft and sudden changes of heat and cold. In the raising of my mushrooms I found a most desirable place in the old beer caves, or cellars, of Mr. Gluck, on upper Nicollet Island. In these caves I found a good temperature the year around, which is very important in mushroom culture; in winter, to save fuel; in summer, as it is the only possible place to raise mushrooms during the hottest weather.

The temperature for a good successful growth of mushrooms should not exceed 70 degrees Fahrenheit and not be lower than 50 degrees.

I prepare the material for my beds by having the sweepings of our paved streets, the clear horse droppings, hauled into these caves. This is the best material to use. After this is hauled into the caves, I have it all piled in a heap and let it ferment to the degree of 130 Fahrenheit. After this material has stood for a few days I have it turned over a second time to ferment to the same degree (130). This I let stand for about a week, being careful that the material does not burn (turn white). Then I mix about one-fourth of garden soil with this material, and if too dry sprinkle it with water. The material should cool off to 100 degrees, when it is time to form the beds.

The beds I make about sixteen inches deep, and when they have cooled off to 90 degrees (which they will by handling the material in forming them) I commence to spawn.

I get good English mushroom spawn (which comes in brick-like forms) and for a couple of days I have it spread flat upon my beds so that it may draw a little moisture. I then break the spawn into pieces the size of a small egg and insert them into the beds about two inches deep and a foot apart each way and cover this with a half an inch of soil. The beds then should be beaten or trodden down and in about a week or ten days the spawn will spread (if effective) and resemble a spider-web spread all through the beds, which is the pregnancy of the fungi. Then I cover the beds with an inch and a half more of garden soil and press it down good with the flat side of a spade.

The caves are then closed up tight, with the exception of a ventilator which I have above the entrance, for about three weeks, and at the end of that time I open them for plenty of ventilation—but no draft of any kind.

The dampness of the sand rock and the depth of the caves, forty feet, produces, in about two months the best kind of a mushroom. They are as white as snow and juicy and do not look like those which grow out-doors and which are usually of a brownish color.

Mushroom culture is a very simple thing that any one who likes them can easily accomplish with a little trouble. You can raise them in a meadow,

in a barn, in sheds or in the cellar, either in the spring or fall of the year.

Mushrooms, when gathering, I find it best to pull or twist out so that they leave no decaying stumps or roots in the beds, as that prevents after-growth.

I would just like to say a few words about the Coprinus Comatus (maned mushrooms, or Shaggy Mane) as they are commonly called, and the Morchella Esculenta (the Morel), which grow out-doors.

The Shaggy Mane mushrooms are eatable in some form of cooking and served like an oyster stew are delicious, but are never as highly prized as the Agaricus Campestris. The Shaggy Mane mushrooms can be found in pastures, roadsides, river banks, farmyards and around old hay-stacks in the spring and autumn months, coming to the surface in the shape of an egg. When they get old they turn to a black, inky substance.

The Morchella Esculenta (the Morel) is another well known eatable mushroom. Its surface is broken up into very little cells, resembling a honeycomb or tripe. They are of a brown color and are hollow. This mushroom is found only in the month of June, around shady groves, old oak stumps and places where charcoal has been burned. The Shaggy Mane mushrooms grow in bunches and the Morchella Esculenta grow singly.

In concluding my remarks upon mushrooms, I would say that persons contemplating gathering wild mushrooms be careful and notice that if the mushrooms grow out of a socket, or cup-like shape, and are very odorous and of a greenish hue or discolored stem,—if so, the mushrooms are poisonous. If in gathering wild mushrooms you are in the least doubt as to their being poisonous or not, it is far better to leave them alone than to take the chances of eating them. It is almost impossible to tell or distinguish by writing the difference between good and poisonous mushrooms as there are so many varieties.

ECHOES FROM FARMERS' INSTITUTE.

HON. A. K. BUSH, LECTURER ON HORTICULTURE.

Our institute continues to be well attended with a good interest in all subjects, especially horticulture. At Le Roy we had some most excellent strawberries on exhibition, one specimen measuring 5½ inches in circumference, which was grown under exactly the methods taught from the institute platform.

From careful inquiry I find all who are planting nothing but the best staminate varieties are succeeding beyond their expectations. The Lovett, Splendid and Bederwood are very popular varieties in this part of our state.

At Le Roy I saw a very good crop of plums on trees four years from the seed—suggestive of the possibilities of plum growing in southern Minnesota. However, I would not advise fruiting many of these plum seedlings; better graft them with some of our excellent improved varieties which are known to be of superior quality. Life is too short for us to spend much time with wild plums of uncertain quality when we have so many kinds to select from which are fully equal to the best in the east or south. I visited a farm, yesterday, where 1,000 evergreens were planted twenty years ago. They cost the man $100, being largely Norway spruce, about 12 inches high when he bought them. I learned on inquiry that they

were handled and planted much as I am advising in my work with the institute. Mr. Frank, the owner of this farm, has 1,600 acres, largely devoted to the dairy business, eighty-five cows being milked at present on the farm where the evergreens were planted. I asked him if those trees did not add more than $1,000 to the value of that part of his farm. He replied that money would and could not buy them, now that he really understood their value to him with his stock of cows on the prairie. He promptly confessed that he made a serious mistake in not making additional plantings every spring of the little trees and extending these perfect shelter belts about the pastures, as well as the buildings and feeding yards.

It is not necessary for me to add that fruit trees and other ornamental shrubs are doing well under such favorable conditions.

I was shown a peach tree on these grounds which passed through the severe winter of 1899 in perfect condition, without any other protection than those stately evergreens. Such demonstrations of the great value of evergreens on our prairies are very encouraging to the state horticultural society, which is maintained to encourage such work.

Spring Valley, June 13, 1900.

THE CATALPA FOR MINNESOTA.

J. T. GRIMES, MINNEAPOLIS.

(Written before the death of Col. Stevens.)

I shall introduce this essay by giving a little sketch of the personal history of Col. John H. Stevens, one of the earliest pioneers of Minnesota, who built the first house on the west side of the river at the Falls of St. Anthony and established a home there before the city of Minneapolis even had an existence, and, I am glad to say, that same old pioneer is still with us, an honorary life member of this society today (perhaps some of you may have heard of him), and that same old house which he built is still standing, but having been removed by the park board and placed within the public park at Minnehaha Falls, there to be preserved as a memorial to the character, integrity and worth of the man who laid the foundation stone of this metropolis.

About the year 1854 or 1855, in exploring about the shores of Lake Minnetonka, he found the catalpa, there being one large tree and several smaller ones, which evidently grew from seed produced from the large one. The colonel, by right of discovery, took possession of the larger tree in his own name and for his own use, and had it made into a bedstead, which can now be found standing in his own house. I would suggest that the park board improve the opportunity and secure that old bedstead, and have it placed in that old house, where it properly belongs, to hold in memory the discovery of the first and only catalpas ever found growing indigenous upon the soil of Minnesota. What became of the clump of smaller trees, no one knows, as the spot had not been marked, and the woodman's ax, that "spares" not "that tree," but marks for destruction everything that comes within its way to impede the march of civilization (so-called), has long since, no doubt, sealed its doom.

Some account of the catalpa being found growing in Minnesota was published at the time, I believe, over the colonel's own signature. The question of fact in regard to the identity of the tree which had been found

in Minnesota was taken up by the late Dr. John A. Warder, a distinguished botanist of his time, who resided at Cincinnati, Ohio, and who contended, in an article which was published in one of the magazines at the time, that Col. Stevens must certainly be mistaken, as the catalpa was a tender tree and could not have been found growing wild as far north as Minnesota. This statement seemed quite conclusive, coming as it did from such undoubted authority.

At the meeting of the Mississippi Valley Horticultural Society, held in St. Louis in 1882, the writer, in conversation with Dr. Warder, referred to the catalpa. "Why," says he, "Col. Stevens evidently don't know what a catalpa is! They are as tender as the peach, and if you can grow the catalpa up there in Minnesota you can grow peaches."

Notwithstanding the confidence I had in the Colonel's integrity and his knowledge of forestry, I was not prepared to meet that statement at the time. Some time after the veritable catalpa was pointed out to me, growing on Mark Berry's grounds, on Tenth street, Minneapolis, nearly opposite the Colonel's residence. It has been frequently claimed that there were two varieties, the one hardy and the other more tender, yet so much alike in appearance that it was impossible to distinguish them apart. Since the question of hardiness has been practically settled, the trees have been much sought after by parties who wish to adorn and beautify their home grounds, by giving to them, in effect, a tropical appearance from the growth of those exceedingly large, heart-shaped leaves and beautiful spikes of bloom, with which the catalpa is crowned.

The name ca-tal-pa is of Indian origin, so-called by the Indians of Carolina, where Catesby discovered this tree in the year 1726. It is the Catalpa bignonia of Linn, and Catalpa syringifolia of others. The tree was originally found along the eastern Atlantic slope, from Maryland to the peninsula of Florida, and also in the Mississippi valley, from the northern parallel of Missouri to the Gulf of Mexico. Authorities have been undecided whether there is more than one distinct variety, some contending that there are two or more. The late Dr. Warder, of whom I have spoken, thought the eastern and western were different, and so gave the western tree the name Catalpa speciosa.

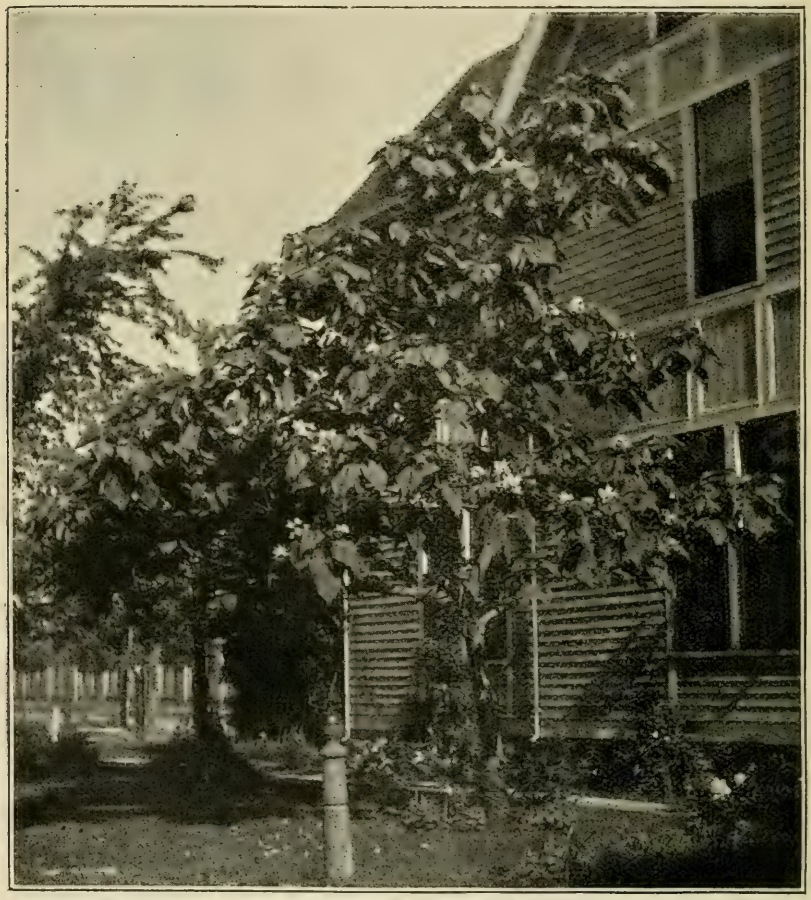
We leave this matter of doubt to those whom it may concern, and look more closely into the hardiness of the tree, a matter of greater interest to this society, since most authors agree that the tree is not sufficiently hardy for the climate of Minnesota.

Frank J. Scott, in his excellent work, entitled "Suburban Home Grounds," gives a somewhat favorable impression in regard to the hardiness of the tree. He says, "Though planted largely in the northern states and considered hardy, its beauty would be more uniform, and we should oftener see fine specimens if, when first planted, it were regarded as half-hardy and cared for accordingly." Most authorities, however, claim that it will not stand the climate in localities where the temperature goes much lower than twenty degrees below zero. There is one point, however, which seems to be conceded, that the western catalpa is more hardy than the eastern.

In the rich bottom lands along the rivers of the southern states this tree often attains a height of from seventy to eighty feet, and a diameter of two to three feet. In the more northerly states, it usually grows to the height of from twenty to forty feet. Its branches are wide-spreading, coarse

and stiff, with bark of a light buff gray color. Much that has been written on this subject contains many points that are analogous or theoretical; what we are seeking are facts, simply plain facts.

Hundreds of catalpa trees have been planted out in the last few years in the vicinity of Minneapolis, by the park board, the cemetery associations and by individuals in private grounds, and, so far as I have observed, not a single tree has been winter-killed at any time, not excepting the last winter, which was the coldest in forty years.



CATALPA GROWING AT RESIDENCE OF J. T. GRIMES, MINNEAPOLIS.

If the catalpa is so tender in Ohio and other places south, by what means has it become acclimated here? That there are different species, more or less hardy, I am willing to concede, but it seems that our botanical guides are unable to distinguish them, so as to show any apparent difference in

genera or species in relation to hardiness. With us the only question of much importance is that of hardiness.

I would call your attention to one tree which is growing on my lawn, that seems to be a little different from others, in that it is of more rapid growth, more spreading and robust, with larger leaves and spikes of bloom; but this may all be owing to the soil and care in cultivation. It was brought from Terre Haute, Indiana, when a small seedling of one year's growth, and planted in the spring of 1889. It now stands in height eighteen feet, in extent of branches, sixteen feet, and in circumference around the trunk, two feet and one inch. Thus it seems that the head of the tree is nearly round, and its breadth of shadow nearly equals the height. It has blossomed for several years past, but has only produced two or three bean pods, enough to prove that it is not a pistillate or sterile tree. It seems to be perfectly hardy without protection, and is also free from insects, which would indicate that it was also perfectly healthy. Hence, it follows that our trees are not of that tender variety of which we have heard so much. Could it have been that they originated from the seed of that lone tree which Col. Stevens found growing upon the shores of Lake Minnetonka, and which, no doubt, had been planted there many moons gone by, and watched with tender care by the Maid of the Laughing Water? Of course, this is an allusion drawn from the legend of Longfellow's Hiawatha, Minnetonka being the source and supply of that beautiful stream made famous in history as well as in poetry by the bold leap of sixty feet over the falls of Minnehaha.

Would it not be well for all botanists, horticulturists and others who claim to know whereof they affirm, to tread lightly upon the soil of Minnesota before they condemn the catalpa to destruction before the cold northern blasts of our winter winds?

If Col. Stevens has made out his case and proven the hardiness of the catalpa in Minnesota beyond reasonable doubt, and Dr. Warder, from his standpoint of observation, says it is no hardier than the peach, and we here assume each to be correct in the premises, then it seems to me that the time has come when the peach and the catalpa should be seen growing side by side in our orchards and on our lawns. If not, why not?

My 'talpa tree, my 'talpa tree;
'Tis Minnesota boasts of thee;
Though foreign born, yet thou art free
To roam around, my 'talpa tree,
My 'talpa tree!

What if my 'talpa should depart,
And leave some space within my heart
Untouched by love; or envy's dart
Should aim to strike my 'talpa tree,
My 'talpa tree?

The sages say that you belong
To nightingale or cuckoo's song.
From peep of day to close of dawn
Sing praise to God, my 'talpa tree,
My 'talpa tree!

Note.—The last verse refers more particularly to the tree as the home of the song birds. The catalpa, with its broad leaves and dense foliage, so

completely hides the little warblers from view that one who did not know might readily suppose the song to emanate from the tree itself; the cuckoo being the first to usher in the day with notes of praise, and the nightingale the last to close the song when twilight disappears.

OUR POET FRIENDS.

S. M. OWEN, MINNEAPOLIS.

While in attendance upon the meetings of this society year after year, I have often thought that an occasional break in the serious earnestness that characterize the deliberations of this intensely practical organization would be welcomed by its members and visitors. The pursuit of horticulture in this region is doubtless what Longfellow called life; it is earnest, it is real, and it is not surprising that the materialistic and unsentimental environment of orchard, garden and vineyard cannot be dissipated by the atmosphere of these gatherings, without an effort, at least. But the effort is worth the trial, worth it in an economic sense, even, for surely it will inspire you all to more enthusiastic and cheerful labor, and will make you ambitious to achieve grander results, if you are made to realize that you are engaged in the promotion of a cause that has ever been near to the hearts and foremost in the minds of the best and brightest men and women the world has known. The time never was when fruit and flower did not refine and exalt mankind, and those results of husbandmen's skill and toil always found sweet and eloquent champions and admirers, whose intellects were capable of clothing their appreciation and love in words that will live as long as letters are known. To some of these words, some of these immortal offerings laid upon the altars that the members of this society are doing so much to sanctify and still further adorn, I propose to call your attention, and I do it without apology, believing that ultimate good will come out of it.

Who will not love flowers more tenderly and work among them more cheerfully when he thinks of them as—

> "Sweet letters of the angel tongue"?

Or when this is his creed:

> "For mine is the old belief,
> That midst your sweets and midst your bloom
> There is a soul in every leaf"?

What pride must one feel in contributing to the birth of a flower that inspires such a thought as this in the pure mind of sweet-singing Shelly:

> "And the rose like a nymph to the bath undrest,
> Which unveiled the depth of her glowing breast,
> Till, fold after fold, to the fainting air,
> The soul of her beauty and love lay bare."

We dislike to see the frost on the late rose, but to the eyes of that most devoted of all flower lovers, Shakespeare, it looks like this:

> "Hoary-headed frosts
> Fall in the fresh lap of the crimson rose."

Our good old friend Montgomery called the snowdrop

"The morning star of flowers."

Will we not be prone to think more charitably of the sunflower after this?

"The sunflower, thinking 'twas for him foul shame
To nap by daylight, strove to excuse the blame;
It was not sleep that made him nod, he said,
But too great weight and largeness of his head."

This paper is to be a medley, you will see,
Flitting from flower to fruit and fruit to tree,

and so let us go back to an old Polish poet, prophetic soul, who thus pictured the life and death of our prairie trees:

"Who midst the prairie wild sublimely stand,
And grapple with the storm god hand to hand,
Then drop like pyramids away,
Stupendous monuments of calm decay!"

Come with me now far back into the realms of antiquity and see how a garden looked to old Homer, three thousand years ago, and see how like were gardens then to those in the same latitudes today:

"Fenced with green enclosure all around,
Tall, thriving trees confess the fruitful mold;
The reddening apple ripens here to gold;
Here the blue fig with luscious juice o'erflows;
The branch here bends beneath the weighty pear
And verdant olives flourish round the year.
Eternal mildness breathes on fruits untaught to fail;
The same mild season gives the blooms to blow,
The buds to harden and the fruits to grow.
Beds of various herbs forever green
In beauteous order terminate the scene."

It surely must be interesting to you to know that irrigation is at least as old as Homer, and the manner of its application unchanged, for in Homer's garden—

"Two plenteous fountains the whole prospect crowned.
These through the garden lead their streams around,
Visit each plant and water all the ground."

The older we grow the more we know, the more convinced we are that there is nothing really new under the sun.

Shakespeare was up on pruning, for he wrote:

"Superfluous branches
We lop away, that bearing boughs may live."

And to that great poet the

"Fruit field grew and ripened,
Till it stood in all the splendor
Of its garments green and yellow."

Shakespeare knew of the windbreak, too, and see what a perfect description he makes of one in very few words:

"The line-grove that weather-fends your home."

Here are the trees in a regular line, located to defend the home from inclement weather, as plainly pictured as if a page had been devoted to the purpose.

Who cannot love the woods more devotedly when he sees them, as did this exiled duke, a creation of the same poet?

"Now, my co-mates and brothers in exile,
Hath not old custom made life more sweet
Than that of painted pomp?
Are not these woods more free from peril than the envious court?"

Regretting that I cannot complete this beautiful passage, I flit to Milton, who reminds us how near akin we are, ladies and gentlemen, to our first parent:

"Adam, well may we labor still to dress
This garden, still to tend plant, herb and flower."

And Pope saw fruits thus:

"Here Pomona's gifts in grand prospect stand,
And nodding tempt the joyful picker's hand."

If all mortals could see and feel in a garden what this unknown poet saw and felt, how many more of them would be planted and loved:

"There was a bower in my garden plot,
A spiraea grew before it,
Behind ere laburnum trees,
And a wild hop clambered o'er it;
Oftimes I sat within my bower,
Like a king in all his glory;
Oftimes I read and read for hours,
Some pleasant, wondrous story,

"Of stately gardens, kingly,
Where people walked in gorgeous crowds,
Or, for silent musing, singly.
And all amongst my flowers I walked,
Like a miser midst his treasure;
For that pleasant plot of garden ground
Was a world of endless pleasure."

In the bleak December will we not more patiently wait for spring, prepare for its coming and resolve to avail ourselves more fully of the opportunities it affords after contemplating it through the senses of that lamented sweet songster of the west, Benjamin F. Taylor?

"When orchards drift with blooms of white, like billows on the deep,
And whispers from the lilac bush across our senses sweep;
When looking up, with faces quaint, the pansies grace the sod,
And looking down, the willows see their double in the flood;
When blessing God, we breathe again the roses in the air,
And lilies light the fields along with their immortal wear."

The following is a hint, by Miss Mitford, of the comfort and consolation to the life of the lowly that is within the reach of every one who has access to even a little patch of ground in which to delve:

"The rich man through his garden goes,
And 'neath his garden trees,
Wrapped in a dream of other things,
He seems to take his ease.

"One moment he beholds his flowers,
The next they are forgot;
He eateth of his rarest fruits,
As though he ate them not.

"It is not with the poor man so,—
He knows each inch of ground,
And every single plant and flower
That grows within its bound.

"Here he, the poor man, sees his crop,
And a thankful man is he,
For he thinks all through the winter
How rich his board will be;

"And how his merry little ones
Beside the fire will stand,
Each with a large potato
In a round and rosy hand.

"Yes, in the poor man's garden grow
Far more than fruits and flowers;
Kind thoughts, contentment, peace of mind
And joy for weary hours."

How it would accelerate the planting of trees if they could be so regarded by all who can plant as they were by that most ardent of tree lovers, and the horticulturist's best friend, W. C. Bryant, who voiced his love and adoration in that famous invocation, of which I can give but a few lines!

"Father, thy hand hath reared these venerable columns; thou
Didst weave this verdant roof;
Thou didst look upon the naked ground and forthwith rose
All these fair ranks of trees.
They in thy sun
Budded and shook their green leaves in thy breeze,
And shot towards heaven. The century-living crow,
Whose birth was in their tops, grew old and died
Among their branches; till at last they stood
As now they stand, massy, tall and dark,
Fit shrine for humble worshipper to hold
Communion with his Maker."

One stanza I must quote from this same poet's "Planting of the Apple Tree." There is in it a suggestion of the parental relation between the planter and his tree that must touch a responsive chord in the breast of every true horticulturist.

"Come, let us plant the apple tree!
Clear the tough green sward with the spade;
Wide let its hollow bed be made;
There gently lay the roots, and there
Sift the dark mold with kindly care,
And press it o'er them tenderly,
As round the sleeping infant's feet
We softly fold the cradle-sheet.
So plant we the apple tree."

This reference to the apple recalls the following to mind, by Mary Hewitt:

"Let them sing of the bright red gold,
Let them sing of silver fair,

Sing of all things in the air,
All things in the sunny air,
All things in the sea!
And I'll sing a song as rare
Of the apple tree.

"Winter comes, as winter will,
Bringing dark days, frost and rime;
But the apple is in vogue
At the Christmas time.
Then they bring out apples prime,
Then you the roast apple see,
While they toast the apple tree,
Singing rhyme in jolly chime
To the brave old apple tree!"

If our souls are properly attuned, trees may talk to us, as the oak did to Tennyson, and that will make us love them more, and plant more numerously and guard more tenderly.

"To yonder oak within the field
I spoke without restraint,
And with a larger faith appealed
Than Papist unto saint.

"Tho' what he whispered under heaven
None else could understand,
I found him garrulously given,
A babbler in the land."

Not all poetry is written in rhyme, and I herewith give you an example; and he who plants, preserves or restores a forest is contributing to a picture of an edifice like this, so magnificently described by the historian, Parkman. He is describing one of the rooms in that gigantic wilderness home of the aboriginal tribes of North America, of which he wrote so accurately and entertainingly. The English language contains few finer gems:

"Deep recesses where, veiled in foliage, some wild, shy rivulet steals with timid music through breathless caves of verdure; gulfs where feathered crags rise like castle walls, where noonday sun pierces with keen rays athwart the torrent, and the mossed arms of fallen pines cast wavering shadows on the illumined foam; pools of liquid crystal turned emerald in the reflected green of impending woods; rocks on whose rugged front the gleam of sunlit waters dances in quivering light; ancient trees hurled headlong by the storm, to dam the stream with their forlorn and savage ruin; or the stern depths of immemorial forests, dim and silent as a cavern with innumerable trunks, each like an Atlas upholding its world of leaves and sweating perpetual moisture down its dark and channeled rind—some strong in youth, some grisly with decrepid age, nightmares of strange distortion, gnarled and knotted with wens and goitres; roots intertwined beneath like serpents petrified in an agony of contorted strife; green and glistening mosses carpeting the rough ground, mantling the rough rocks, turning the pulpy stumps to mounds of verdure, and swathing trunks as, bent in the impotence of rottenness, they lie out-stretched over knoll and hollow, like mouldering reptiles of the primeval world, while around and on and through them springs the young growth that fattens on their decay—the forest devouring its own dead!"

Who that has seen the primeval forest, as it came from the hand of God,

can call this picture overdrawn! At any rate, Mr. Parkman said that he truthfully described a forest scene he saw in northern New York.

It is no disrespect to the poets I have quoted to say that I have reserved the best for the last, for so I feel it will be regarded by the members of this society, at least, the old ones, for it is a tribute to them by a citizen of our own state and of this city, yet not a member of the society, and, doubtless, personally unknown to most of you. But you will listen to the beautiful tribute with the keener pleasure because it will assure you that you are kindly thought of and your work fully appreciated by a public that you may think cold and indifferent. The poet friend who speaks to you in the following lines is Henry Slade Goff, author and historian, as well as poet:

A TRIBUTE TO THE MINNESOTA STATE HORTICULTURAL SOCIETY.

Forest and plains of a northern clime,
Valleys and hills of the West;
Sweet as the bells of an evening chime,
Wild as the storm billow's crest.
Cherry or raspberry, peach or pear,
Apple or quince there was none;
Only the wild berries here and there,
Ripening in the sun.

On came the men of the early times,
On to the great frontier;
Singing their carols of rythmic rhymes,
Laboring all the year.
Cherry seed, berry seed, pear seed and peach,
Planted in quickening soil;
Promise of fruits o'er the prairies reach,
Cheering them in their toil.

Out from their conquering gardens they came
Together from valley and lea;
Hortus and cultura forming a name
For needed society.
Berry bush, fruit tree and vines of the best,
Westward to furthrest run;
Nurtured by men of the great Northwest—
Such is the work that was done.

Ripening fruit in the welcoming air,
Mellow and luscious and sweet;
Far as the stretch of the prairies fair,
Gardens and orchards complete.
Thanks to you, gentlemen, zealous and strong,
To you and to your compeers;
Honors in history, story and song
Through all the revolving years!

Giving the on-coming thousands a part
Of that ye had planted and trained;
Giving the public your hand and heart,
And portion of what ye have gained;
Blessing the generations to be
Till story of earth shall be told;
Pioneers, freemen and conquerors ye,
Whose glory shall never grow old.

The President: I was reminded while Mr. Owen was reading

his beautiful paper of the words of an old song that used to be sung while I was a boy:

"Whistle and hoe, sing as you go,
Shorten the row by the songs you know."

You will take more interest in thinking of those beautiful things that Mr. Owen has quoted. All through life we should be impressed with the fact that drudgery is doing that kind of work that we take no interest in. The work may be twice as hard, but if we take an interest in what we are doing it will be a continual source of joy to us. Now those boys of the university never complain about the hard work of rowing or kicking football or things of that kind that demand their utmost strength and powers of endurance, but if they are required to do something over and over again, that as soon as it is done requires to be done once more, something that they take no interest in, but set to them as a kind of a stint, something like washing dishes on the part of the women friends, it would be drudgery, drudgery all the time.

THE PROFITS OF BLACKBERRY CULTURE.

W. S. WIDMOYER, DRESBACH.

After a careful study of the subject and of my books, I am tempted to say the profits of blackberry culture in Minnesota are a myth, or, at any rate, very uncertain. The past season we expected to make quite a sum out of our one and one-half acre plantation, as we had laid most of them down the fall before, while hardly any one else in this vicinity had done so; but, alas, the older half of the plantation were so badly used up that we dug them out entirely, while the younger canes looked very promising, especially when in bloom, and until about half grown I never saw a better prospect for a crop, but in spite of all we did they commenced to dry up on the bushes and continued doing so all through the season, until there was only about one-third of a crop left to harvest.

But in the face of all this we have taken extra pains in putting them down this season, covering them more than usual.

While the prices received for blackberries last season were mostly good, we cannot figure out any profit in the undertaking, and from an experience of fourteen years I place the blackberry at the foot of the list of small fruits, as far as profits are concerned.

Aside from two large crops, which sold for an average of eight cents per quart, and one light crop, which sold for two dollars per sixteen quart case (except two cases at $1.25 per case), I have found the profits of blackberry culture very small, and, taking it as a whole, I would say, very uncertain.

A Good Old-Fashioned Bean.—If every one knew how vastly superior the Black Butter bean was in flavor to the wax beans now so popular they would plant no other variety. So far as my experience goes there is no variety of wax bean that can compare to this in flavor.

Trial Stations.

MIDSUMMER REPORTS.

CENTRAL TRIAL STATION, ST. ANTHONY PARK.

R. S. MACKINTOSH, ASST. SUPT.

Not very much injury was done by the peculiar winter of 1900. Spring opened late and so quickly that the planting season was very short. From that time on (to June 21) little rain has fallen. Under such conditions it has been very hard to get seeds and newly set plants to grow. The blackberries were practically all killed in the winter. They were covered last fall in the usual way by bending down and covering with earth. Raspberries came through the winter in fair condition, though some were injured, more or less. A fair crop is promised under favorable conditions. The strawberries were not as vigorous as usual this spring. At this time, with what rain has fallen, and in addition of being irrigated twice, they promise a fair crop.

Currants and gooseberries are fairly well loaded. The late frosts did not do very much harm to them.

Plums are heavily loaded and are filling out very well so far. Experiments with the Bordeaux mixture for prevention of brown rot are being carried on. A few trees have been sprayed with Paris green to prevent the work of the curculio. The Paris green was used at the rate of one pound to two hundred gallons of water, to which was added some lime water to neutralize any free arsenic present. Many of the apple trees, both of standard and new varieties, are well loaded and give hopes of a fair crop. Some trees in the Russian orchard were reset last fall. The dry weather this spring makes it doubtful whether they will live or not. The cherry buds were not hurt much this last winter. Where there was any injury done the entire tree was killed. Some nice early cherries have been gathered.

The grounds about the new horticultural hall have been planted with shrubs and trees. The grass seed sown has not started well on account of the drouth.

The shrubs and trees already set on the grounds are doing very well this season. The Tamarix was not killed back much last winter, and this summer has been full of bloom.

EUREKA TRIAL STATION.

C. W. SAMPSON, SUPT.

Our grape vines and blackberry bushes came through the winter in very poor condition. A great many grape vines were entirely root-killed. I had several new varieties that would have come into bearing this season which were root-killed. Our plum and apple trees are loaded with fruit and promise a large crop. The curculio were not very troublesome and thinned out the fruit about right. I have eighteen of the Aitkin plum in bearing

and consider them the earliest and largest plum in the state. Peach trees are well set with fruit and came through the winter in excellent shape. Red and black raspberries promise a good crop, although not as heavy as last season. Minnesota can certainly make a fine showing at our state fair this fall in the way of fine fruit.

LA CRESCENT TRIAL STATION.

J. S. HARRIS, SUPT.

I began the planting of apple, pear and plum trees and grape vines on my present place in the spring of 1857 and soon after began to add strawberries, raspberries and blackberries to the plantings, and every spring in the following forty-three years I have planted more or less of these fruits and from the first have made it an experimental work, giving every reasonably promising variety that I could get hold of, whether American, Russian or newer seedlings, a fair and impartial trial, and am continuing to do so. Thousands of trees and hundreds of varieties have been planted with the sole view of finding some that were adapted to our climate and that could be planted by those who come after us with a certainty of success.

The last winter was a comparatively mild one, and, although the soil was very dry at the beginning, a heavy snowfall occurred before frost had penetrated to any considerable depth and afforded ample protection to the roots of trees and plants, and the cold was not intense enough to injure the tops of any reasonably hardy varieties. Blackberries without any protection except the snow came through without any injury and are now promising the best crop for many years. Red raspberries did not come through quite as well as in the previous extremely cold winter. This is probably owing partly to the roots being weakened by the long drouth that prevailed in the fall and the buds starting again in October. Our first killing frost caught them unprepared, and a great many of the canes died down to the roots. Apple trees bloomed more heavily than usual and gave early promise of an extraordinary crop, but present indications are that it will be considerably below that of '98. They are dropping off badly, and especially so on varieties that had been injured in the winter of 1898-9. This will prove better for the trees, as a full crop would probably end their existence, while not fruiting heavily they have time to recover and become quite vigorous. I will give more of a detail of varieties in the fall report, but for the benefit of those who will order trees this fall will say that I do not think that the Walbridge, McMahon White, Giant Swaar and Ben Davis are worthy of any further trial. There are also a considerable number of the Russians that are unworthy of being given any further trial, either from tenderness of tree, blighting propensity or unfruitfulness. After taking out the leading members of the Duchess, or Oldenburg, family, the Charlamof, Longfield, Ostrekoff, Anisim, Antonovka, Hibernal and for very extreme locations some of the Anis family, it is a waste of time to plant and care for them in any locality where the Wealthy and Patten's Greening will succeed.

Our strawberries have produced much below a full crop. The cause, we believe to be partly the drouth of last autumn and its repetition this spring. The varieties doing the best are the Bederwood, Brandywine, Splendid, Clyde, Glen Mary, Ridgeway, Ruby, Seaford and Warfield. Currants are not producing a very heavy crop. Among the newer varieties, the Pomona,

Wilder, Moore's Ruby, Red Cross and Fuller all seem to be promising and are doing better this season than the Red Dutch or Prince Albert. Reports on other fruits will be made later, except we will state that all trees in the trial nursery wintered well and are making a fine, healthy growth.

MINNESOTA CITY TRIAL STATION.

O. M. LORD, SUPT.

An unusual drouth has prevailed through May and up to this time. Strawberries have suffered, both new plants and those in fruiting. The fruit is small in size and prices are low. Currants promise a good crop, and are now ripening. Red raspberries at this place are a failure this year. Black raspberries are much better than the reds. The Palmers are ready to pick: Gregg and Nemaha not ripe. The Conrath will be discarded. Blackberries where protected are a large crop; even the wild bushes are loaded with fruit. What few cherries are in bearing look very well. The Ostheim is ripening. The Wragg and Russians are still green. Apples now appear very promising, especially the Wealthy and Duchess. Plum trees are also loaded with fruit, though somewhat affected by drouth. A shower on Thursday (June 21) has revived them. Several varieties not grown here before have been grafted this spring and are doing well. Also a dozen apple trees of kinds that have not before been tried here.

The ground was well supplied with moisture in the spring, so that well-rooted trees and plants have not been affected with drouth as much as those set late, though where thorough cultivation has been given it has been more effective than mulching.

The season so far has been peculiar in regard to insects. The Colorado beetle very destructive; very few curculio; no aphides, or plant lice; and I have not been able to find on my place any plum pods, or pockets. This serves to confirm my opinion, expressed to the society heretofore, that this difficulty is the result of climatic conditions more than of any inherent disease.

PLEASANT MOUNDS TRIAL STATION.

J. S. PARKS, SUPT.

There is very little to report from this station. The past winter was quite severe on small fruits, but apple trees came through with small loss. No one variety seemed to suffer in particular. Grapes pruned and laid down in the fall and covered with earth were killed. Raspberries not covered were all killed to the ground. Strawberries not covered were killed severely, while covered ones suffered much loss.

The prospect for fruit this season is not very flattering. Some varieties of apples, especially the crab varieties and some seedlings, are pretty well loaded, while some of the standard varieties are lacking in that abundance we desired.

Wild plums will be about one-third of a crop. Nut-bearing trees will have very little fruit this year. We have many bearing trees that gave us a bountiful crop last year, and now we are using black walnuts for fuel, after disposing of all we could. We have set this year—with what we had before

—all the grafted kinds of cultivated wild plums I could find to test and compare as to quality. Seedling trees of late planting are doing fairly well, but troubled much with green aphis. We have grape vines two years old from seed that have set nice specimens of fruit. We anticipate something fine from them.

WINDOM TRIAL STATION.

DEWAIN COOK, SUPT.

The drouth up to this date, June 15, has been the severest ever known here at this season. All evergreens, except Scotch pine, are making a poor growth. Jack pine seedlings, fully exposed to the sun, have a wonderful capacity for resisting drouth conditions.

We had no snow on the ground all winter except for a few hours at a time, and about all plums that had been grafted on anything else than native roots were root-killed; also a few apple trees went the same way. Raspberries winter-killed more than usual. All varieties not laid down and covered are killed to the ground.

Strawberries wintered all right, but on account of the drouth will be only about one-fourth of a crop. We are on our second picking now.

Currants will be a light crop. The bunches do not fill out. Long Bunch Holland is doing the best.

Dwarf Juneberries will be a full crop. This fruit has been bearing with us about twelve years. The bushes require no trimming; they also have been free from either insect depredations or disease and bear every season.

Cherries are doing poorly. I have just finished cutting out nearly all of my cherry trees. There were several varieties of Russians. I don't think that this is a cherry country.

Apple trees bloomed very heavily, that is, many varieties; but the May freeze destroyed a large proportion of all varieties; yet most varieties are bearing some, and the standard varieties will give us a good crop. The varieties that are giving us the most fruit this season are Okabena, Wealthy and Duchess. The heavy south wind of May 9 blew off about one-half of my Duchess. The Breskovka gives the best satisfaction of all the apples that ripen earlier than the Duchess.

Of crab apples, the Early Strawberry and Florence give us the most fruit. I prefer the Florence, as the fruit is the very finest for market. The Martha appears to be about barren; it does not fruit. I have two trees thirteeen years planted. They are very large trees, blossom heavily every spring, but we have never got a pint of fruit from both of them. They are not bearing this year.

We have no blight so far this season, and there has been no killing back of the tops of any of my apple trees for several winters. My apple orchards are all either well mulched with stable manure and straw or else kept well cultivated, and drouth is not noticed by them.

The outlook for plums is the best. With few exceptions our trees were well mulched last winter with stable manure. We are using the cuculio catcher and will have but few stung plums. The following varieties are the most promising at this time: Wolf (freestone), Wyant, De Soto, Hawkeye, Forest Garden, Cheney, New Ulm. The Mankato, Blackhawk, Harrison's Peach, Gaylord and several other varieties are looking fine.

The Rollingstone, as is usual for it at this station, is bearing very lightly, and the Ocheeda, as usual, is bearing only a few specimens, which are sure to be badly stung. We have had very few plum pockets this summer. The only disease we have noticed on tree or fruit is the scab or plum rust on the fruit of the Rockford. This is the only variety affected. (It is the same at Jos. Wood's place, six miles away.) This scab was noticeable as soon as the fruit could be seen. The trees are well loaded with fruit, but I have no plum fruit on the place, including a large number of seedlings, that makes as poor a showing at the present time as does the Rockford.

RECOGNITION OF VALUABLE SEEDLINGS.

HON. A. K. BUSH, DOVER.

Little can be said of what has been done to encourage or reward the faithful horticulturist who had courage and patience to plant fruit seeds. Much should be said and done to stimulate the planting of seeds from such fruits as give promise of hardiness, vigor, quality, productiveness, etc., in fact, just such as we need for the cold, dry winters and extreme hot winds of the summer in this northwestern country.

After spending much time and money with varieties which succeed well in the south and east but fail with us, we thought the hardy Russian varieties solved the question of fruit growing in this country, where the mercury will freeze in the sun's rays during the winter and then boil if exposed to sunlight during the heat of our summers. Truly a country of great extremes—where large treeless pairies are the rule. But these iron clads from the steppes of Russia were disappointing to fruit growers in our state.

Now the cry goes out, "Minnesota Seedlings for Minnesota," which, in my opinion, is good common sense. If we stick to this text, preach it, teach it and pay those who produce any seedling worthy of recognition we shall soon have the ideal home grown fruit we so much desire; in fact, we have secured many of them now which are equal to the best grown in every state or country. Our native Wealthy apple scores 100 in quality wherever it is known.

Now, what have we, as a horticultural society, done to encourage or reward the person who produces these worthy seedling fruits? To be sure, we offer a small premium at our meetings, as does the state fairs. The J. W. Thomas sweepstakes premium of $100 on apples did much to call out such fruits, but no mention was made of quality in tree or fruit, and the sour crab apple, which would give a hog the lockjaw, counted the same as the most worthy specimen on the table. While we know this premium has done much to call out obscure seedlings, the premium should be awarded on quality, not quantity.

The one thousand dollar premium offered by our horticultural society is in the right direction, but we have gone to the other extreme. The whole world in 6,000 years of its history has not produced its equal; our prize is simply "out-of-sight"; it is hanging too high, with a string attached, and that string in our hands. The whole proposition reminds me of the Yankee neighbors of ours back in the early 60's, who attached an ear of corn to a pole which was so adjusted that it was just out of reach of his oxen on the breaking plow. That fellow would do more breaking than any other in that

county during the season, with expense to mouth, whip and corn reduced to its lowest premium. No one but a state of Maine yankee would devise such a scheme, except I should mention our horticultural society. I believe our scheme is working fully as well as his, with cost about the same.

Now, what is the proper thing for us to do in this matter? We, as a society, are doing more in recognition of valuable seedlings than any other society or state in the northwest, but, in my opinion, we are not doing enough. We should pay a generous premium in cash or legal protection for any and all worthy seedlings. The state should aid the horticultural society in their effort to such an extent that the business of growing seedlings would promise some profit to the planter. It is a disgrace to Minnesota that Peter M. Gideon should have died in poverty—when he originated so many valuable seedlings and distributed the same over the entire state, one of which, the Wealthy, alone is worth millions to our commonwealth. Like the rich iron mines of the state, its value is hardly appreciated by its citizens. Many condemn the entire fruit list as recommended by our society, because it contains no fruit which attains their ideal in quality, hardiness, production, etc. They buy tree strawberries, everbearing blackberries, etc., from people who have just what they want! We should be thankful for the blessings of today, for our improved horticulture, with its promise of much better things in the near future, secured to us by the presistent and determined efforts of such men as Mr. Gideon, Mr. Loudon and others, who were willing to sacrifice time and money, yes, even the comforts of life, that future generations might enjoy better and more hardy fruits than they.

The people of the United States are most patriotic. Why? Because we pay the largest premium on true patriotism. As a nation our men are given due credit for what they do and dare. Now, shall we as representative horticulturists, in Minnesota, begin such a policy just now, making the memory and family of Mr. Gideon an example? I believe we should. Here is a testimonial to Mr. Gideon by Prof. Goff, which appears in The Fruitman of November.

Madison, Wis., Oct. 18, 1899.

Editor Fruitman:—I like the proposition made by a correspondent of the Rural New Yorker, that each grower of the Wealthy apple send to Mr. Gideon one cent each year for each bearing tree of the Wealthy in his possession. Too little appreciation is given to the originators of truly valuable fruits.

It will be a profound shame if Mr. Gideon is permitted to suffer for lack of the ordinary comforts of life in his declining years, and I know of no more sensible way to relieve him than the one proposed by the correspondent above referred to. I suggest that growers of the Wealthy apple who are willing to agree to carry out this plan send in their names to The Fruitman, and that the money be sent to Mr. Gideon on Christmas of each year.

The count of Wealthy apple trees should include all that have ever borne fruit and that are still alive, and not simply the number that chance to bear in any given year. I am willing to join this club, if the proposition meets with sufficient favor to form a club at all. E. S. GOFF.

That sounds like business to me. I like it, too, and am willing to join such a club, which I think should be formed in every state where the Wealthy gives such great promise as a profitable commercial apple. Such a contribution would make his family comfortable, and we should enjoy this opportunity of giving or paying for what Mr. Gideon has given us.

A word to the wise is sufficient. I agree with our worthy secretary, as

suggested in the December Horticulturist, that we or the state should erect a substantial memorial over the remains of Mr. Gideon, also that a tablet should be placed in the new horticultural building to his memory and in appreciation of his life work—which is now history—that we should record to benefit and encourage others who wish to do likewise.

If the people who grow and eat the Wealthy apple in this state should unite in establishing a Peter M. Gideon scholarship in our agricultural college it would be a royal thing to do, and could be maintained with profit to many and loss to no one—for, on general principles, I believe it is more blessed to give to a truly worthy person or cause than to receive gifts.

If we, as Minnesotans, take this matter in hand and do the right thing by a fruit so worthy as the Wealthy, other states, by our example, will be more ready and willing to render proper recognition unto their valuable seedlings and the men who originate them. In a country like ours, where property rights are so jealously guarded by national and state legislation, I believe the originator of any seedling tree or plant should be able to legally control his production as much as the man who patents an invention. I am not able to say just how this can be accomplished and not interfere with a rapid introduction and dissemination of those which are really valuable. The proper place to settle those questions is not in the courts but before just such gatherings as this, where all are interested, practical and intelligent judges of what is right and just, also in the best interest of a progressive horticulture, such as this society represents, with its membership which we confidently expect will include 1,000 representative Minnesotans during the year 1900.

In my opinion this society should offer a premium of at least $25.00 at its annual winter meetings for the best seedling apple not kept in cold storage and not having won a premium from the horticultural society, with smaller premiums for others on exhibition which possess merit worthy of recognition by the judges. Each of these exhibitors should be made honorary members for one year. Possibly it would be well if all who put up seedling fruits on our exhibition tables were offered this courtesy by our society; it might encourage the planters, being of greater value to some than money, a standard of quality, hardiness, productiveness, etc., etc., being established by competent judges.

Our annual summer meetings should also pay liberal premiums on seedling small fruits, especially the strawberry and raspberry, under the same terms and restrictions as suggested with the apple exhibit. The state should be much more interested in seedling fruits than we and should pay for them generously. If one citizen can afford to give $100 for a collection of seedling apples, the state of Minnesota, to maintain its dignity in this matter, should give, at its state fairs, at least $1,000 for seedling fruits adapted to our climate, soil and other Minnesota conditions.

This progressive work is always contagious. If Minnesota leads, as she usually does, being found in the front ranks of all progressive work and pioneer processions, our sister states will be sure to follow, possibly with that $1,000 apple. Wonderful results on any line can be secured if individual effort is united. Individuals make the state and nation. It is you and I and the others.

Shall we begin right now to do our part?

I hope and trust our society at this session will decide on doing some-

thing worthy of Minnesota horticulture in rewarding the faithful planter of fruit seed—also pay him generously for his productions, always having the ideals for our needs in mind when we note the improvement made in fruit growing during the past ten years. We know better things are in store for us if we continue in well-doing. Let us be faithful to the trust given us, and we may live to see Minnesota fruits as famous as its No. 1 hard wheat.

OUR TEST WINTERS.

R. H. BUTTERMORE, LAKE CITY.

To what extent were all kinds of fruit injured the past severe winters? I answer, I cannot tell, but I can tell some of the reasons why some fruit raisers do not succeed.

Respecting strawberries they should be protected from the severity of winter by a light covering of straw; but sometimes it is neglected, and therefore a small crop the ensuing year is the result. Almost all kinds of small fruit have to be cared for in some way in the late fall. If not the careless one will reap his reward.

About the winter-killing of apple trees, it is a question in my mind whether it is the severity of the winter or the changeableness of it from either very cold to warmer and from moderate to severe cold that causes the damage to our apple trees. It is also my candid belief that the variableness of the weather in the spring, freezing and thawing, has more to do with the killing and blighting of our apple trees than the steady cold winter has. Thawing and freezing when the buds are opening is very injurious to apple trees, causing a dwarfing of the trees and blight. Unacclimated soft varieties are bound to winter-kill anyhow.

We cannot grow oranges in Minnesota, but we can grow apples and good ones if we plant our orchards in a good location, have the standard hardy varieties and take good care of them.

I have noticed lately in my orchard some special varieties that I wanted to propagate from, and after cutting the scions the trees blighted badly the next summer. They never blighted before. Pruning in the wrong season is also a very ruinous practice. There were a great many apple trees killed and injured by the severity of the winter of 1884-5, but a great deal of it was caused by the changeableness of it, and also we had not the hardy varieties then that we have now.

Last winter (1898-99) was, I believe, as cold as that of 1884-85, but our apple trees were not very materially injured; some unacclimated varieties were hurt, and that is all.

We are advancing, and I believe in the near future we shall raise apples that may supersede any that are grown in the United States, and winter ones, too. About twenty-five or thirty years ago there were a good many orchards planted, but they were of a very short duration. In a few years after there was nothing left of them but dry stumps. I also had one, and it shared the same fate. Now you can travel in this locality and on every hand you can see beautiful orchards. What causes the difference? It is because our Minnesota horticulturists are up and doing, importing, originating, selecting, experimenting, propagating and thinking.

A PLEA FOR NATURE STUDY DRAWN FROM EXPERIENCE.

What is nature-study?

"It is the seeing of things which one looks at and the drawing of proper conclusions from what one sees. Nature-study is not the study of a science, as of botany, entomology, geology, and the like. That is, it takes the things at hand and endeavors to understand them, without reference to the systematic order or relationship of the objects. It is wholly informal and unsystematic, as the objects are which one sees. It is entirely divorced from definitions in books. It is therefore supremely natural. It simply trains the eye and the mind to see and to comprehend the common things of life; and the result is not directly the acquirement of science, but the establishing of a living sympathy with everything that is.

"The proper objects of nature-study are the things which one oftenest meets. To-day it is a stone, to-morrow it is a twig, a bird, an insect, a leaf, a flower."—Prof. L. H. Bailey, from a leaflet entitled "What is Nature-study?" issued by the College of Agriculture of Cornell University, N. Y.

The aim of this paper is not to prove the value of nature-study as taught in our public schools, for that has been already done. The question for us is no longer, shall we introduce nature-study into our public schools? for it has already been introduced and, so far as the spirit of the work is concerned, has become so firmly established as to prove that it has come to stay. What it needs now is not arguments in defence of theory or method, but united effort on the part of those who appreciate its mission in some way that will offer the aid of a strong helping hand to those who through patient perseverence have developed the movement in Minnesota.

When we stop to think that this great work, which we all consider of such vital importance to our children, is, in each school throughout our state, dependent, absolutely, upon the interest of the teacher and her ability to give of her limited time and defray, out of her often slender income, any necessary expenses; while village improvement societies and civic leagues, all over the state, are taking up the work of distribution of flower seeds and the improvement of school grounds, it does seem as though, with this State Agricultural College and this State Horticultural Society to furnish the knowledge and direct the way, some plan might be devised whereby all these scattered forces could be brought together and made to contribute far greater results than are possible under the present condition of things. New York and Indiana have gone on record in this matter. I wish that Minnesota could be next.

Just to illustrate what great results can grow out of even a little effort to help: When we of the flower department of the Minneapolis Improvement League learned that there was no appropriation, whatever, of funds for the support of nature-study in our public schools, we asked ourselves: "How can we help these busy teachers in their noble effort to support this great work?" The answer came: "Furnish in our annual distribution of seeds to the school children the varieties required in the study of plant-life at school. As every child loves to carry flowers to school he can thus have the additional interest and pleasure of contributing, through his own individual effort, the necessary material and in this way save his teacher trouble and expense.

Nature-study, of course, includes, in the study of plant-life, every kind of plant, tree, fruit and vegetable; but the two most commonly met with,

and therefore important for study next to trees, are flowers and vegetables. Last year, with a very different motive, the Improvement League had given vegetable seeds. The object then was to interest those of the older boys who were not especially interested in the culture of flowers and who, we thought, might become interested in the more practical work of vegetable gardening. The results were varied. Some were wonderfully successful, and admiring relatives in many families testified to the superior quality of these home grown vegetables. We did not see many of them, for they were eaten up as fast as they reached the proper stage of development.

But, on the whole, the experiment was not as successful as the flower culture had been; there were many failures, owing to the lack of knowledge of how to plant and care for the vegetables. The question was, how to supply this knowledge? Miss White's little pamphlet was the guide in the culture of the flowers, but we had no Miss White in the vegetable business and consequently nothing in way of instruction for the would-be agriculturists.

To make a long story short, we learned through the secretary of the State Horticultural Society of Professor Shaw's famous garden, and as Secretary Latham assured us that Professor Shaw had never been known to refuse to help in any good work, it resulted in our bringing the matter before him and asking his advice and help. The rest many of you know. The little gardeners were invited to Professor Shaw's home in St. Anthony Park, to an open air lesson beside his famous garden—this to be followed by a trip over to the Agricultural College to see the animals, and all that could be seen in one afternoon. The Twin City Transit Company most generously furnished chartered cars and free transportation for the children on three consecutive afternoons, three parties, consisting of eighty boys from the Washington school the first day, eighty boys and girls from the Peabody school the second day and a hundred and twenty-five from the Holland school the third day. Nearly three hundred children, in all, received the grandest lesson in nature-study they had ever known and spent the happiest half day of their lives.

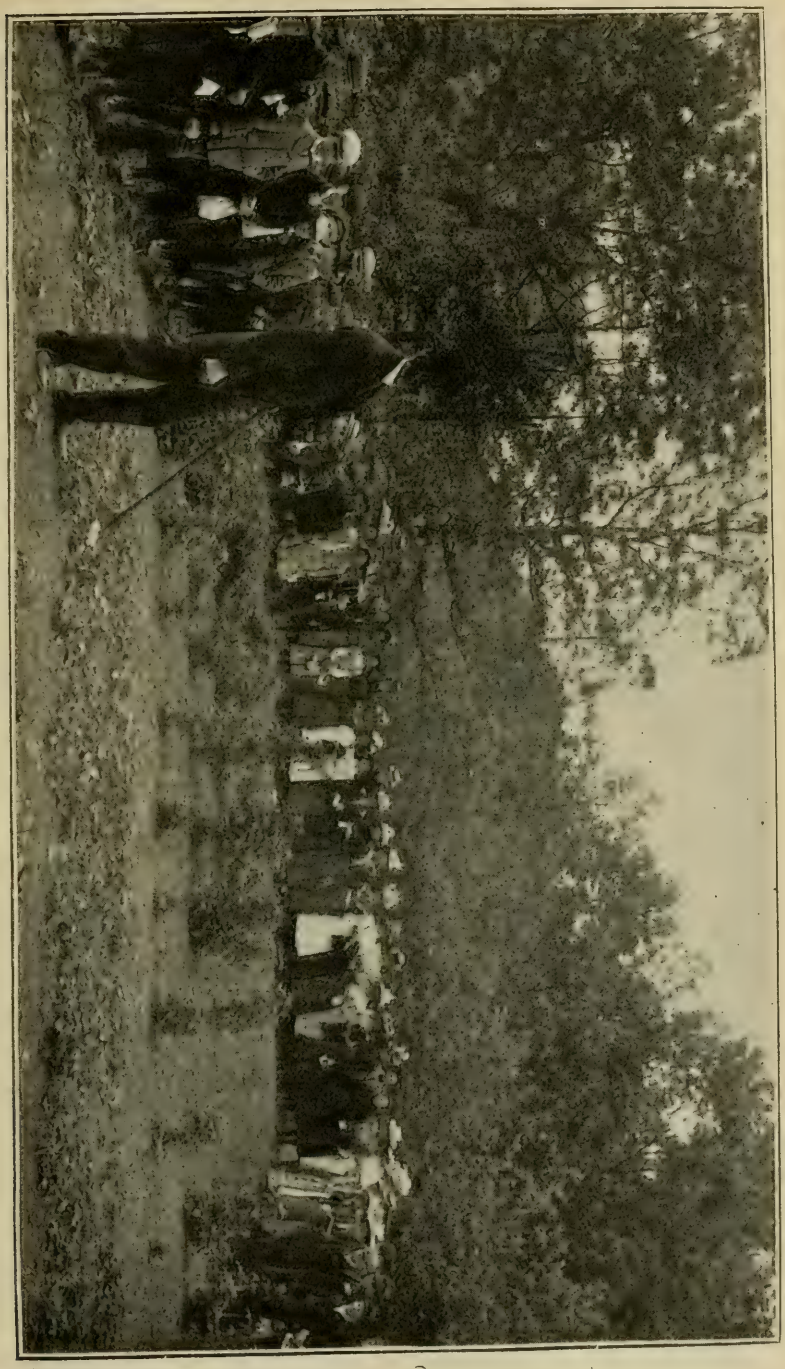
On the day following the excursion the children were unable to keep their thoughts upon their lessons and so were given permission to write letters. Many were written to Professor Shaw, many to the street car company and many to the chairman of the flower committee. All are interesting, and it has been difficult to decide which to choose. All are just as they were written, each a perfectly natural, spontaneous expression of appreciation. Here are a few chosen almost at random:

(These letters are printed verbatim, just as written.—Secretary.)

Dear Mrs. Barnard:—

I enjoyed it very much down at the stock farm, and I hope you did too. I learned more about planting yesterday, than I have any other day in my life, for I did not even know that we should plough up the garden in the fall, or leave it humpy, so that the frost can act on it in the winter. And if it did not rain for two or three weeks I would turn the hose on and sprinkle the garden, but Prof. Shaw has showed us another way, and he said he hadn't watered his garden for two weeks, and yet he can keep his plants from dying. He told us to keep the earth on top fine, and that keeps the moisture in. He showed us how to keep the weeds out too, he said we should get a hoe and turn it side ways and hoe the earth up, and that will turn the roots of the weeds up and they will die.

Then Prof. Shaw took us to a barn where some cattle were and talked



PROF. THOS. SHAW AND THE SCHOOL CHILDREN IN HIS FRUIT GARDEN.

to us about them, then he took us to a stall, where, what do you think were, there were two twin calfs at home we have a calf a year old, and he isn't as big as these twins although they were only five months old, then we went from there to another barn, and in this barn were pigs, the old pigs were horrible, but the little ones were very cute, then we went outside and saw some more pigs, and these pigs a man took the picture of.

Then we went to see the sheep O! what a sight, they were very tame, but one little lamb was as it seems to me talking it came up to me and gave me a look in the face as if to say I'm very hungry, and also the sheep had there picture taken.

Then we went into a room where we sat down and on the platform was a pile of sawdust, Prof. Shaw opened a door and a man came in with a bull and brought it on the platform, the bull had a ring in his nose to, if he didn't mind what was said to him they would pull the ring and that would hurt him. Then we went to a room where we saw stuffed animals in glass cages, such as the wild cat a fierce looking animal too the deer, skunk, weasl, rats, mice, snakes, chickens, ducks, owls, bluejay, and all kinds of birds. I'll just tell you we had a snap now.

Then we went to the green-house where there were oranges growing the first I ever seen in a green-house rose and all kinds of plants. I'll tell you the children were happy to see all these things, we then went down to meet the car and had a nice ride. Thank you ever so much for the vegtable seeds. I'll have to bid you good-by now.

Yours Resp.

* * * *

Mrs. F. H. Barnard:—

Dear Madam,

I must tell you Mrs Barnard that I had a fine time Wednesday afternoon. The trip back and forth was not lonesome. That trip was not like I used to have, sitting on the car as still as possible without talking to anybody.

When Prof. Shaw told us about the gardens; was the most interesting thing I heard. Going from stable to stable and looking at different kinds of animals was also a thing to see. I must close now and must not forget to thank you for planning such a nice trip for us.

Yours truly,

* * * * *

Dear Mrs. Barnard:—

I enjoyed your seeds very much.
I had flower seeds so I could not go.
But the children who went had vegetables.

They said that it was very nice and as they rode on the car they were singing and were waving their hankerchifs at all the people they saw.

They went on a farm and saw lambs sheeps and pigs, and a big pig had some wee baby's and they were very small.

They didn't come home before seven oclock at night.

* * * * *

Dear Mrs. Barnard:—

I had a fine time yesterday, and I don't believe I have ever enjoyed myself so much as I did then. I never seen such cunning little pigs before and they are always grunting.

If I was to choose a little pet out there I would choose a little lamb. Professor Shaw he laughed at us when the sheep ran by us because we were afraid.

The flowers were very pretty and they had such a fragrant smell. This was the first time I ever seen oranges growing.

I do really wish I could go and study there when I get old enough.

Yours truly,

* * * * *

My dear Mrs. Barnard.

I cannot stay without telling you how I enjoyed all the afternoon that Dr. Jordan gave us. I never in my life enjoyed myself as much as then, I

thank you very much for the trouble you gave yourself by coming and meet us and I was also glad to meet you too.

About the State Farm I had never been there before and was very glad to go, the smallest pigs were as small as I ever saw, and the cows were all very nice. The stuffed animals were also pretty and we were told that Mr. Shaw's son stuffed many of them. The Green-house was just fine why we saw some big cucumbers on the vines and all kinds of foliage plants and many other kinds that I cannot mention.

When we went through the building where they make butter the man explained us how cream separated from the milk and there was some kind of a wheel that went around one thousand times a minute.

Well I will close by telling you that I enjoyed every minute of that afternoon especially Mr. Shaw's lecture.

Yours truly,

* * * * *

I wish that these excursions could become a regular part of the nature-study in our public schools.

We of the Improvement League are most grateful to Professor Shaw for coming to our assistance, to the street car company for making it possible for the children to accept his invitation, and to the State Agricultural College for allowing so many city children the benefit of the trip through the college buildings, grounds and stables. We are sure that it will be more than repaid in the gratitude and interest of these children and of the knowledge of this new influence that has been thus brought into their lives. And I hope, and I ask you to hope with me, that it is the beginning of a movement that will place Minnesota in the list of states that are helping their teachers to get out of nature-study in the public schools the best possible results, each according to its needs.

THE MILWAUKEE APPLE.

A. J. PHILIPS, WEST SALEM, WIS.

In your last issue [April] Mr. Clarence Wedge asks for some information about the Milwaukee apple. I understood years ago when the originator, Mr. George Jeffrey, of Milwaukee, showed the fruit at the state fair and at our February meeting, that it was a seedling of the Duchess and seemed to be quite a good winter apple, but as it originated in the favored region along the lake shore—where tender varieties stand—it was not disseminated much. But about five years ago when visiting the extensive orchard of the late S. I. Freeborn, in Richland county, Wis., I found a beautiful tree well loaded with fine apples, late in the fall, and as it was in the Russian orchard I at once called it a winter Russian. I saved some of the apples to show at our winter meeting in hopes some of our Russian men could name it, but when I took them to the meeting I found it to all appearances the same apple that Henry Tarrant, of Janesville, was showing as the Milwaukee. I at once, being attracted by appearance of the fruit and the tree, bought some trees and secured scions, which I top-worked. All are growing finely. I top-worked more this year, also some last season, and as there are some fruit buds on the grafted trees I hope to see some fruit this season and will be able to report more of its behavior later on. Geo. Jeffrey, 2530 Lisbon avenue, Milwaukee, can give its origin and early history. There is one tree of it in the trial orchard at Wausau, which is growing very thriftily.

SCHOOL GARDENS.

O. M. LORD, MINNESOTA CITY.

A distinguished fruit man of Iowa, a delegate to our annual meeting, said he had one criticism to offer on the Minnesota society: it was composed of old men and needed to take in the young men and women of the state to preserve its vitality. I could only say that in all new countries, guide boards were needed to keep travelers from going astray, and we old fellows could not be expected to do much, but we ought to be able to point the way. An elaborate discussion of school gardens is not desirable at this meeting, and I shall only attempt to call the attention of the society to the importance of beginning work in our line among the children.

The common country school is still an unsolved problem. I do not need to picture the surroundings of the most of them, but when we know that environment has so much influence in the formation of character and habits of after life it is greatly to be regretted that early school life should not be surrounded with all the appliances necessary to infuse the mind with a love of the beautiful and a knowledge of the useful. The great majority of us now are, and are to be, dependent on agriculture and its handmaid, horticulture. It follows then, that nature-study, including plant life, fruits and flowers, should be a systematic part of school life. Nature has done her part for us. We have ample grounds, a fertile soil and a climate adapted to a great variety of productions and a perpetual school fund, self-imposed, that enables us to rank with any other people educationally. The city schools are working under different conditions, but the kindergarten has been found to be the basis of much of their superior excellence. Some of the teachers of the city schools will claim that there is no room for more studies, that the pupils are now overworked, and no doubt this is true in some schools. The drill is all mental and intellectual, the physical entirely neglected. We are willing to admit that a broad intellect is more capable of grappling with the necessities of active life than a dwarfed one, but nature-study as indicated has a tendency to develop all the faculties, to stimulate habits of thought and of observation, and to round out an otherwise incomplete life.

The most pressing want at the present time for beginning this work is competent teachers. Let this state society formally ask our school workers, our members, our State Farmers' Institute teachers to consider this subject, and the request will be cheerfully heeded, and the time not be far distant when every school will be supplied with a practice ground in addition to the play ground.

Sweden now takes the lead of other countries, as every school there has a garden. Germany, France, Austria and Italy are closely following. There are a few schools in this country with a garden attached, and fruits, vegetables and flowers are planted and cared for by the pupils. Their influence has proved most beneficent in checking the tendency for vandalism among the boys, and in affording a means of pleasant occupation of leisure time, stimulating them to habits of industry and usefulness and storing the mind with practical knowledge available in mature life.

Secretary's Corner.

OUR PRESENT MEMBERSHIP.—Six members were added to our annual roll at the late summer meeting, bringing the number of annual members for 1900 up to 771. Is'nt there some one in your neighborhood would be the better off for affiliation with this society?

LOOK FOR PROF. GREEN'S LETTER.—In this number is printed in part a personal letter received June 8th, written in Germany May 28th, which allows only ten days in transit. The professor was evidently enjoying the part of his trip referred to. We may hope to hear from him further in the August number.

GREEN'S "FORESTRY IN MINNESOTA" APPRECIATED.—The Board of Regents of the Minnesota State University has appropriated $2,700 to pay the expense of binding and distributing 10,000 copies of Prof. Green's late work on forestry. This work was prepared two years since for the use of the State Forestry Association. Every one interested in forestry in this section should study it.

GROWTH OF OUR SUMMER MEETING.—Heretofore one-half of Armory Hall, at the School of Agriculture, has been given up to the diners, but this year it was found necessary to fill the whole hall with tables, and then a second sitting was needed to accommodate a large fraction of those in attendance. The fruit exhibit was crowded out into an adjoining room, especially well adapted to it, however.

A PROFITABLE ASPARAGUS ACRE.—Mr. Wyman Elliot reports that F. X. Crepeau, an experienced market gardener of North Minneapolis, received this year from the sales of one acre of asparagus $450.00. Last year the same field yielded $280.00, the difference being largely accounted for by an advance in prices this season. Evidently the asparagus business is not yet overdone in this market.

PREPARATION OF APPLES FOR COLD STORAGE.—In a short quotation on storing fruit for the Omaha Exposition, to be found elsewhere in this number, a method of double wrapping in preparation for storing is described and inferentially enjoined upon all prospective exhibitors. First wax paper, then common paper. If practicable, try it in storing fruit for the winter meeting. Wax paper is to be found at all the paper houses at a low price.

STORE FRUIT FOR STATE FAIR AND WINTER MEETING.—Arrangements have been made for placing fruit in cold storage in Minneapolis for these two occasions, and labels to be used in marking packages for this purpose can be had in any quantity of the secretary of this society. As usual there will be no expense for storage, and fruit so stored will be delivered free at the state fair or winter meeting, as the case may be. The exhibit this year, at both places, should be the largest we have yet made. Send for labels now, and have them on hand when wanted.

CHAS. Y. LACY'S PRESENT TO OUR LIBRARY.—At the time of Mr. Lacy's recent visit to this city, spoken of elsewhere in this "Corner", he presented to the library of this society, of which he has long been an honorary life member, a large number of volumes of horticultural books, bound magazines and reports, which have been ripening in storage here in Minneapolis during his

twenty years' absence. They number fifty-three, not including several of which we already had copies on the shelves and a number not on strictly horticultural topics. A list of this valuable contribution will be published later. The society is under very much obligation to the donor.

INFORMATION WANTED OF YOU!—Have you filled out and mailed to the secretary the circular sent you lately to learn many important facts in regard to the fruit growing interests in our state? If not you will forward the work of the society very much by doing so at once. If you have not received a copy, through some mishap, will you please notify the secretary and another will be sent you—and the same if your copy is mislaid. Some of our members have an idea this circular is intended for nurserymen alone. This is not the case; we want a report from every member of the society living in the state. If you are not growing nursery stock, omit that part and fill the rest and send it along.

PHOTOGRAPH OF THE "VETERANS IN HORTICULTURE."—This photo was taken by Miller, the Minneapolis photographer, in December, 1897, and contains most excellent pictures of J. S. Harris, S. H. Kenney, O. M. Lord, Wyman Elliot, E. H. S. Dartt, J. T. Grimes, J. H. Stevens, Ditus Day, J. C. Kramer and Wm. Mackintosh. For a long time the negative of this plate was lost, but it has been found, and copies can be had for $1.00. It is a very large picture, 18x26 inches, and will make an appropriate adornment, nicely framed, for any of our horticultural friends to have in either parlor or office. The secretary can furnish a printed slip giving the names of those in the group and a title "Veterans in Horticulture" to go with the picture. Mr. J. T. Grimes has lately ordered three copies in addition to the two previously secured, one of which is to be presented to the "Pioneers" and hung in their recently constructed log house on the state fair grounds. Do you want one?

EX-SECRETARY CHAS. Y. LACY CALLS.—The owner of an unfamiliar face presented a hand to "ye editor" and remarked "my name is Lacy." "Chas. Y?" queried "ye editor." "The same" was the response, and we shook hands and renewed acquaintance after a separation of twenty years. For about this period Mr. Lacy has been a resident of Montana, engaged in the sheep husbandry, but he has lately disposed of his business there and removed to Long Beach, Cal. For five years, 1875-80, he was secretary of this society, and might have been yet had not a youthful ambition taken him away from the state. During this period he was Professor of Agriculture in the State University and was, perhaps, the first to begin practical operations on the farm land attached to it. The record of his work in this connection appears in the reports to the Board of Regents for those years and as a record of initial efforts is interesting reading. After a short visit in this city Mr. Lacy has returned to his California home. At the age of fifty years, he is still a young appearing man, with few gray hairs. We hope to meet again.

MAJ. A. G. WILCOX died suddenly, at his home in Hugo, Minn., on the morning of June 6th. He was at the time editor of "The Farmer," secretary of the Minnesota Live Stock and Breeders' Association, and held other positions of trust and responsibility. A member of this society for some years and an attendant and worker at our meetings, he had become endeared to all of us who had had the opportunity of making his acquaintance. Such a death leaves many gaps not easy to fill and many wounds that time alone can heal.

MAJ. ALFRED G. WILCOX,

LATE OF HUGO, MINN.

[See biography.]

THE MINNESOTA
HORTICULTURIST.

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In Memoriam.

MAJOR ALFRED G. WILCOX,

HUGO, MINN.

DIED JUNE 6, 1900, AGED 59 YEARS.

Major A. G. Wilcox, well known in Minneapolis and St. Paul newspaper circles, died suddenly of heart failure, June 6th, at his summer home near Hugo, Minn. He was best known to many of the editors through his position as press agent of the state fair association. He discharged the duties of that office, as he did all others, pleasantly, expeditiously and without friction.

Alfred Gould Wilcox was born March 31, 1841, in Madison, Ohio. He lived on a farm, attended common schools and academy until fifteen years old, when he entered Oberlin college. He was in the junior year when the call for troops came under which the 105th Ohio was organized. He was commissioned first lieutenant of Company F, participating in all the raids, battles and skirmishes to the close of the war; was promoted to captain and assigned to Company F; mustered out as such, but later breveted major. Soon after the war, having chosen a literary occupation, served apprenticeship as city editor of the Cleveland Leader. Afterwards he became consecutively owner of the Journal, of Fremont, Ohio; Telegram, Richmond, Ind., and Courier, New Castle, Ind.; removed to Minneapolis in 1872, when he became manager of the Daily News, and afterwards the Tribune. Later he began subscription book publishing, his greatest success being the Buckeye Cook Book, which has reached a sale of about 1,000,000 copies. In connection with these publications, he issued the Housekeeper, which, under his management, obtained a circulation of 120,000 in 1887. During this time he devoted much of his time to agricultural interests. Together with Col. W. M. Liggett he opened the Grand View stock farm at Benson; he was also owner of the famous Brookside farm at Kirkhoven, and has had much to do with introducing Holstein-Fresian cattle into Minnesota, and for three years has been the secretary of the State Live Stock Breeders' Association. For the past five years he has resided with his family on his farm, three miles from Hugo, on the St. Paul & Duluth road, and for nearly four years

has been the editor of "The Farmer," of St. Paul. He leaves a widow and six children.

Maj. Wilcox had been a member of this society for five years prior to his death and of late a regular and interested attendant at its meetings. He was a most earnest friend and champion of the society, highly respected by all and especially endeared to those who had the pleasure of a personal acquaintance. The passing of such a man from us leaves a double duty on those remaining to make good the loss. Major Wilson's interest and influence in the society was developing rapidly, and if his life had been spared to its full allotted span, he would, without doubt, have become one of its most useful and honored members. There are none but pleasant and helpful memories connected with this dear departed one.

Secretary.

LAKE MINNETONKA FRUIT GROWERS' ASSOCIATION.

ARTICLES OF INCORPORATION.

We, whose names are hereto subscribed and who are residents of Hennepin county, state of Minnesota, hereby agree to associate ourselves together as a co-operative association, under and by virtue of the statute of the state of Minnesota relating to and governing such corporations.

ARTICLE I.

The name of this corporation shall be the Lake Minnetonka Fruit Growers' Association, and its place of business shall be at Long Lake, Hennepin county, state of Minnesota.

ARTICLE II.

The business of this association shall be to buy, sell and deal in small fruits of all kinds grown in this vicinity and to do all things necessary and requisite to be done in conducting a general fruit business.

ARTICLE III.

The officers of this association shall be a president, treasurer, and a board of three directors, who shall hold their office for the term of one year, or until their successors are elected and qualified.

ARTICLE IV.

The annual meeting of this association shall be held on the first Monday of January of each year, at one o'clock p. m.

ARTICLE V.

The names of the first officers of this association are as follows: Milo Stubbs, president; Thomas Talbert, treasurer; Joseph H. Lydiard, D. V. Plant and A. B. Coleman, directors.

ARTICLE VI.

The president and treasurer of this association are hereby authorized to execute and acknowledge all papers, contracts and deeds necessary to be

executed and acknowledged by said association, but they shall not execute or acknowledge papers of any kind except by consent and direction of the board of managers of said association.

In witness whereof the said Minnetonka Fruit Growers' Association has, by its president and treasurer, affixed its hand and seal this 6th day of June, 1898.

BY-LAWS.

I.

It shall be the duty of the president to preside at all the meetings of said association and the meetings of the board of managers, sign all certificates of stock issued by said board of managers, and sign all orders drawn on the treasurer. In the absence of the president the board of managers shall select one from among their number who shall act as president pro tem, and during such time shall have all the powers of the president.

II.

It shall be the duty of the treasurer to receive all the monies due said association and pay the same out upon the order of the president, and to deposit all money in his hands not needed for actual current expenses in some bank designated by the board of managers, and said treasurer shall not be liable on his bond when said money is so deposited.

III.

The board of managers of said association may appoint a member of the association who shall be styled general manager, whose duties shall be, under direction of the board of managers, to take charge of the buying and selling of fruits, collect and receive the pay therefor and to pay the same immediately into the hands of the treasurer, taking his receipt therefor.

IV.

The board of managers shall hold frequent meetings during the active berry season, and shall examine the books of said association and ascertain the actual condition thereof, and give such instructions to the general manager as will be for the best interest of the association.

V.

The treasurer and general manager shall each give separate bonds in the sum of one thousand dollars, said bonds to be approved by the board of managers.

VI.

The treasurer and general manager shall receive for their services such compensation as may be decided upon by the board of managers.

VII.

Special meetings of said association may be called at any time by the board of managers or president.

VIII.

Any officer of this association who willfully neglects his duty may be fined in such an amount as the board of managers may deem just and reasonable, and the amount of the fine may be retained from any money in the treasury that may be due him, said fine to be distributed among the stock-

holders as other funds are distributed; or said office may be declared vacant by a vote of two-thirds of the board of managers, and the vacancy filled by a majority vote.

IX.

Voting at the annual meeting of said association shall be by ballot, unless that by uanimous consent of the stockholders it may be by acclamation. No stockholder shall have more than one vote.

X.

At all meetings of the stockholders of said association not less than seven shall constitute a quorum.

XI.

The general managers of said association may appoint a secretary, whose business it shall be to keep a record of all the meetings of said association, and to do such other things in regard to the business of said association as the general managers may direct.

XII.

No person can become a stockholder in this association unless he is a producer of fruit, except the general manager.

XIII.

The constitution and by-laws may be altered or amended at a regular or special meeting called for that purpose, but such alteration or amendment must be presented in writing at a meeting held previous to the one upon which such vote is taken.

XIV.

All fruit delivered to the association shall have the grower's number plainly stamped or marked on the end of each case, and all fruit shall be subject to examination by the general manager.

XV.

Any member who delivers to the association fruit inferior in quality or variety shall suffer the loss occasioned thereby.

XVI.

All fruit received on any one day from different growers of same grade shall be treated alike, shall be shipped to the most favorable market, irrespective of who grew the same, and each day's shipment shall be treated as an entirety. Every grower who contributed to such shipment shall be entitled to his share of the proceeds of such day's sale in proportion to the number of crates shipped by said grower; but one-tenth of each day's proceeds shall be retained by the association until the complete returns for the season are received.

XVII.

The expense of carrying on the business of the association shall be paid from the said ten per cent so retained, and the balance of said amount, if any, after paying such expense at the time of the settlement of the sales for the year, shall be divided among the members of the association in proportion to the amount of fruit each member has furnished.

XVIII

Each stockholder by the usual order may at least once each week during

the active berry season draw from the treasurer one-half of the money collected and due him for fruit sold on his account.

XIX.

No certificate of shares shall be issued to any person until the full amount of said share has been paid, and no person shall become a stockholder except by consent of a majority of the board of managers.

XX.

Any member selling fruit outside of the association will be subject to a fine to the amount that the board of managers may deem just, and such fine may be retained from the amount owing said member, and be divided as other surplus is divided.

XXI.

If any member wishes to withdraw from the association he shall notify a member of the board of managers, and the board by a majority vote may release him.

At a regular meeting of the stockholders of the Minnetonka Fruit Growers' Association the hereto attached constitution and by-laws were by vote adopted by said association on this 15th day of March, 1898.

MILO STUBBS, President.

Attest:

ROLLA STUBBS, Secretary.

PRUNING, FALL CULTIVATION AND WINTER PROTECTION OF THE BLACKBERRY.

R. A. WRIGHT, EUREKA.

Pruning.—Pruning the blackberry satisfactorily is one of the most difficult problems I have met with in my endeavor to make blackberry culture profitable. My plan, for a time, was to pinch off the young canes at a height of three feet. This process makes the cane very stocky and throws out a great number of laterals which grow from two to four feet long. This makes the work of winter protection very difficult. Other seasons I have not cut the canes back until October. This plan is not satisfactory to me, as it is almost impossible for the pickers to walk between the rows. Because of their height many canes are broken off by the wind, making this kind of pruning expensive. The last two years I have attended to the pruning just before the berries ripened, cutting back all canes to four feet in length. I like this plan much the best of any I have tried, as the pickers can gather the berries very easily and the canes are handled very nicely when being covered for the winter.

Fall Cultivation.—I never cultivate the blackberry in the fall. During the berry harvest, if the weather is dry, I keep a dust mulch about two inches deep, by cultivating every other day with the fine tooth cultivator. This keeps the soil well stirred and helps to retain the moisture.

Winter Protection.—This is the problem that is difficult for the amateur fruit grower to solve. I believe it is useless to grow the blackberry unless it is well protected from our Minnesota winters.

It has been very amusing to me to see how some people protect their blackberries for the winter. They take hold of the top of the canes, and

bending them over until the tops touch the ground, then shovel on dirt sufficient to held them down, leaving the center of the cane from one to two feet from the ground. If they bend them much lower than this they are sure to break most of the best canes, and when they are finally through they have given very little protection to the berry patch.

In protecting my canes from the severe winters of this climate, I cover them completely with earth, so that no part of the cane is exposed. In laying the canes down I use a potato fork, loosening and removing some of the dirt from one side of the hill, then placing the fork on the opposite side of the hill and pressing it the full length of the tines into the soil. Taking hold of the end of the fork handle with the right hand, I pass the left arm around the bush near the top, and by pulling on the end of the fork handle, and pressing with the left arm I bend the whole hill, mostly in the root, and lay it flat on the ground. My helper shovels on enough dirt to hold the canes in place. All plants in the row are laid in the same direction, and each year they are bent the opposite way from which they were the year before. They lie down much better when reversed each year.

When the canes are carefully laid down, I have a system of plowing which we follow to expedite the work. I prefer a 14-inch plow with a long moldboard. I use two horses and a set of short whiffletrees and evener. On each side of the row I plow a furrow about four inches deep, turning the furrow onto the row. Most of the canes are covered with the plow, but a man follows with a shovel and covers what the plow leaves. As I have said, when the work is finished none of the canes are to be seen. I have used a 12-inch plow with one horse. This does very well but takes more time.

Mr. Eddy: I do not think you would get close enough to the row by using two horses.

Mr. Wright: You can set the plow over far enough by using a short evener and whiffletrees from the mower. I tried to straddle the row, but I could not make that work.

Mr. Jewett: How long does it take to cover an acre?

Mr. Wright: I have never covered an acre from beginning to end. It takes two men a day to cover half an acre and it takes two or three hours to do the plowing and perhaps a half day's shoveling.

Mr. Yahnke: How far apart are your rows?

Mr. Wright: Eight feet.

Mr. Burnap (Iowa): How about taking them up in the spring?

Mr. Wright: Begin at the opposite end of the row where you laid them down in the fall and work back on the row.

Mr. Burnap: What tool do you use?

Mr. Wright: I do it all with the fork.

Mr. Jewett: What time do you take them up in the spring?

Mr. Wright: When the buds begin to swell.

The President: Is there any danger after you do take them up?

Mr. Wright: I never lost any by frost.

The President: Have you had any trouble with canes becoming exposed by rains washing off the soil?

Mr. Wright: There has been a little trouble in that way, but I am always sure to look after that, and if we have a heavy rain I send a man over the patch to see that they are covered. I never lost any yet by covering in that way.

Mr. Jewett: Would there be any special advantage in covering with straw after the soil was put on?

Mr. Wright: Perhaps it might be a help in a smaller plantation, but I have never found it necessary.

Mr. Elliot: Have you ever lost any plants by root-killing?

Mr. Wright: Not in blackberries, except in a wet season.

Mr. Yahnke: Can the plants be raised in the spring if they are bent in the roots so they will stay?

Mr. Wright: They stay up as high as I want them to stay. I do not want them to get high from the ground. I would rather they were not over two feet from the ground.

Mr. Yahnke: If they are full of fruit do they not bend back on the ground?

Mr. Wright: I run a wire a little over a foot from the ground for the canes to rest on, and other parts I mulch and do not use any wire. I do not believe I shall put up any more wire for anything on the place. Where they are not wired I think they should be mulched unless you straighten your canes or press the soil against the side on which they were bent.

Mr. Haggard: What is the object in having them lean?

Mr. Wright: We always get the best fruit where they are close to the ground. You take a bush standing upright without any shade, and the fruit is always smaller.

Mr. Haggard: Don't you think you get too much shade?

Mr. Wright: I find that the berries which are exposed are always inferior. The sun quite often does considerable harm when they are upright, but when slanting the sun cannot hurt them.

Mr. Jewett: Don't you find that they pick easier?

Mr. Wright: Oh, certainly, yes. I think it is much the best system to keep them as much on a slant as possible.

Mr. Elliot: How much mulching do you put on?

Mr. Wright: About four inches.

The President: After it settles?

Mr. Wright: No; probably not; when it settles it is not over three inches. The instruction I give the men is to put it on from four to six inches deep; we use marsh hay and put it on thick. I prefer the slough grass, wire grass hay for mulching to anything I have ever used. It is better than anything I have ever tried.

Mr. Yahnke: Do you mulch all the ground or just the hills?

Mr. Wright: I leave room enough in the center to run the cultivator through, but I mulch inside of the row thoroughly, leaving about three feet in the middle.

Mr. Yahnke: Which do you prefer, wire or mulch?

Mr. Wright: Mulching has paid me a little better. Where I used wire I did not mulch the last two years I cultivated, and the berries dried up on that patch this year.

ROOT-KILLING OF APPLE TREES.

PROF. N. E. HANSEN, BROOKINGS, S. D.

Prof. Hansen, (S. D.): This morning, at the meeting in the city, I spoke something on the subject of root-killing. The substance of a bulletin on root-killing American trees was published last month in the Minnesota Horticulturist, so I need not go into that matter here.

If any of you desire to see specimens of the true Siberian crab you can do so after the close of the meeting. Some of them will be new to all of you. These came from Prof. Sargent, and he obtained them from Dr. Riegel, the director of the Botanical Gardens at St. Petersburg. The true Siberian crab will not root-kill at Lake Baikal, in Manitoba or Assiniboia, where the temperature goes down to sixty below, with very little snow in that country, and apples that will stand that should be considered hardy. This is a pure pyrus baccata; you see a pure specimen of the pyrus baccata. The way you can always tell the true Siberian crab is that the calyx, or blossom end, is perfectly smooth, whereas the other crab is the same as an ordinary apple, and the calyx or blossom end does not fall off at the time of ripening. This is the hardiest little specimen of the apple. This (indicating) is a specimen that stood a temperature of forty below with no snow. After I had been to Russia I solved the problem of root-killing. The point I want to make is this, there is no standard apple that is hardy, that will stand our Dakota conditions; the Anisim and Antinovka, seedlings of the Hibernal type, and a standard apple, were black as a hat last spring—so we have cut it out. I have here an apple, a wild apple from the Province of Koursk in southern Russia, and apples that were perfectly hardy there have gone out at Brookings. You talk about a long scion with a short root—they all went out last winter.

Mr. Burnap, (Iowa): Did you not report that the roots of the scion would make the tree hardy?

Prof. Hansen: That was the first winter, and I had only a single tree that stood; all the others in that same lot were killed. The point then is that the Russsians find they must go outside their own apples for a hardy root. There is no form of standard apple that will stand severe freezing without any snow on the ground, so they have come to the Siberian for stock. In a general way, it makes the tree two or three years earlier and a slightly dwarfish tree. Since the publication of the bulletin I have received some more evidence. Dr. Luger, of the Swabian government, is a foremost authority on pomology, and he has published a great many books. Here is what he says of the use of the pyrus baccata as a stock: "Pyrus baccata and pyrus prunifolia is recommended as half standard for the cultivated apple in dry, shallow soils." You see he recommends it for dry,

shallow soils, and we have a dry and shallow soil. In another book he says the reason the use of the pyrus baccata is preferred as stock is because they grow weaker than ordinary apple seedlings, and yet they grow stronger than ordinary stock. The pyrus baccata is used extensively in Europe. I think in future orchards in Dakota and northern Minnesota we will have to be satisfied with smaller trees and plant them close together; in that way we will get earlier bearing trees. The point I want to make is that the whole root system must be of the Siberian crab. We had German experience and Russian experience, but this is the American experience. We want to put our shoulders to the wheel and solve this problem. It may be the Transcendent seedling will do, and it may be the Siberian seedling will do. As far as our condition in South Dakota is concerned we will begin at the bottom.

Mr. Sherman, (Iowa): What is the objection to the ordinary method?

Prof. Hansen: They root-kill every winter.

Mr. Sherman: I mean on this crab stock?

Prof. Hansen: The complaint of the too dwarfish growth of the tree. The only experience I have been able to learn of was that of Mr. Patten. He has had some experience in that line, and there are certain Wisconsin people who, about thirty years ago, worked them as root-grafts. Mr. Wilcox, of La Crosse, approved this method, but he preferred the budding method. I have not been able to get at the full results. They use the pyrus baccata and the pyrus prunifolia. It is not the method they use in Russia.

Mr. Sherman: What should we have the whole root system on?

Prof. Hansen: On the Siberian crab. The only objection is the smallness of the tree. The seedling is already established. I saw those trees in the nursery in northern Russia, and they were fine trees, but in southern Russia they use the ordinary seedling.

Mr. Dartt: Was there any snow on the ground when your trees root-killed?

Prof. Hansen: Not a bit.

Mr. Dartt: Any crab apple killed?

Prof. Hansen: My Virginia crab rooted from the scion, and I had a good thousand; they all root-killed. All the scion roots were dead.

Mr. Sherman: About your Virginia crabs, do you know they were rooted from the scion?

Prof. Hansen: I do not know for certain, but I am satisfied in my own mind they were.

Mr. Lyman: Most crabs root from the scion very readily.

Mr. Elliot: You spoke of budding those trees; is there any objection?

Prof. Hansen: Budding is not any better than grafting; that is the nursery way.

Mr. Wedge: The objection to root-grafting Siberian crabs is the same, and for the same reason we object to cellar grafting of the plum.

Prof. Hansen: That is all. It is simply the means of having the seedling established in the ground. If you do not want to bud you can graft next spring.

Mr. Dartt: Do you know that the crab root will not kill as quick as the common apple root?

Prof. Hansen: I heard only of one instance, and that was an accidental experience. The point I wish to emphasize is that the Siberian has a per-

fectly smooth base, the calyx segments coming off at time of maturity. The Hyslop and Transcendent and a whole lot more are types between the pure Siberian crab and the cultivated apple.

Mr. Philips, (Wis.): Do you know why eastern nurserymen recommend budded trees to trees grafted in the root?

Prof. Hansen: Simply because it gives them smoother trees they can sell better. The point I want to make is that the ordinary apple seedling all over Europe forms a tap root, and when they put them out on their soil they do not make a satisfactory growth the first year, but if they plant a seedling and have them established a year they get a better growth. On our soil it will not do because the seedling is too near the surface, we use a long scion and a short root. All over Europe they transplant them the first year when they are about a month old, and upon transplanting them they pinch the tip of the root. I did that this year; I sowed the seed and transplanted the piece of root and I got a wonderful development of the root system. Heretofore it was simply a straight shoot, but by transplanting when a few weeks old I got a root system that astonished me. I broke off the top root and got a fine branching root.

Mr. Busse: Any difference in hardiness between budded and root-grafted trees?

Prof. Hansen: There is not a single bit of difference. It is simply a question as to how far down you can get that tender seedling.

Prof. Hays: What do you intend to breed to make a good variety?

Prof. Hansen: We have to use our Siberian crab.

Mr. Philips: I want to say a few words right along this line, and that is in regard to those eastern trees. I spent a week on that mission this fall. Some men came from the east and worked in the vicinity of Oshkosh, where our state has two or three local societies, and they began to sell a large amount of budded trees. They told the people the budded trees would stand the cold better and be longer lived than the grafted tree, and they sold a large number of trees, but some of our local people knew what they were doing. They sent for me to come and help investigate the matter, and I found they had made a lot of people believe that an eastern budded tree was better than a western grafted tree. They made them believe that the union where the graft was put in underground was always unsound, and the agent had some roots with him that he had found somewhere and showed them where the western tree was unsound. He was doing quite a business through here, and they appointed a meeting at which he was to be present, and I was to be there. I had made some investigation so as to be ready for him. But one of those men he had been selling to came—and he had those men set them in the fall. Now I found this, I found a man who had bought a hundred of those trees, and he had set them in the fall. I told him he had made a mistake by not setting them in the spring. I said I had had an experience of twenty-five years planting trees in the spring, and I knew it would have been better to have put them in the cellar until spring. I askd him if he would allow me to take twenty of them. He let me take twenty trees, and now, to tell you the truth, out of those twenty trees there was not a single budded tree; they were all grafted. I sawed those trees across where they were grafted, I sawed them at that meeting, and there was not one of those trees that was a particle unsound. He had shown them a nice straight tree, but what he delivered to those farmers were grafted

trees, except to a few who knew what a budded tree was, and to those he delivered budded trees. Eastern men are working that scheme right along in the west.

Professor Hansen referred to Mr. Patten. I believe people of the west, gentlemen, have always underrated the work Mr. Patten is doing and has done. He is one of the most careful pomologists in the west. He has a lot of stuff here. I think he has some seedlings that will be very valuable to the people of the northwest. He tells me that after experimenting with all these crabs to produce good roots he has discarded two varieties that were always recommended. He tells me that after his experience he finds the Virginia and the Martha do not produce as good seedlings as some other varieties. He gave me this list: He says the Whitney No. 20 he has never grown a seedling from that was not hardier than the original. He says you may see the most beautiful and most uniform tree he has grown from the Briar Sweet—good, strong branches and dark colored bark, and it seems to be hardy. Sweet Russet and Minnesota. These are the first he gave me for root-grafting. This word I had from Mr. Patten recently, and I do think his experiments are very valuable. Mr. Patten is not going to let any scions go until he knows they are right. I saved ten of these crosses which I considered the best I could find on his grounds. Mr. Patten has three hundred of those crosses, and I selected those ten as the best. Mr. Elliot has the list if you want them.

Col. Daniels: The Secretary of Agriculture tried an exhaustive experiment, and it was tried at the Nebraska Experiment Station. I cannot remember what the result finally was, but the whole experiment I consider was invalidated by the most remarkable fact that I think we have in the history of scientific horticulture. When the experiments from year to year and from one plat to another were described, the experimenter reported that on account of the weather being very dry he gave the trees no cultivation, and , therefore, there was a stunted growth. It is a remarkable fact that a man should live to the age of discretion and pretend to know anything about tree culture and make any such break. I supposed that every tree grower, or even any man who has had experience in corn growing, knew that if we cannot get straw or manure or even weeds to mulch with we can substitute a shallow bed of two or three inches of dirt. If any one wishes to get the result of that experiment you can do so by sending for the bulletin. Forty-four years ago in the first nursery in Wisconsin this question came up, and it was held at that time that some fruits do better one way and some another. I know that thousands of trees grafted on the roots were sold in Kansas. I have no doubt it is in a great measure a question of after treatment as to perfect healing.

Mr. Dartt: If the root we graft on to is less hardy than the scions we put on it the more of that root goes with that tree, the more you will get less hardy stock; consequently the piece-graft is better than the whole root-graft.

Berry Baskets for Planting Seeds.—The melon, tomato and cauliflower seeds were planted in old berry baskets and sunk in the hotbed, then the bottom of basket was cut out when the plants were transplanted. The small plants are much easier handled in this way, and the soil is not disturbed about their roots.

PLANTING AND CARE OF STREET AND LAWN TREES FOR SHADE AND ORNAMENT.

A. W. HOBART, SUPT. LAKEWOOD CEMETERY, MINNEAPOLIS.

I am thankful for the opportunity of addressing you on this subject, not that I consider myself authority on trees but for the reason that I am deeply interested in trees and tree planting and think that the subject should be kept before the public as much as possible, and if I am able in this short paper to make any suggestions that will be of benefit to the gentlemen of this association, its purpose will have been fulfilled.

The first thing to consider is the kind of tree to plant, but as I see ahead of me on the program the assignment of this subject to one of your oldest members, and one of the ablest on the subject of trees, I will pass it, presuming that you will have already made your selection of variety from his recommendations. Having decided what to plant, great care must be used in the selection of your trees to get good, straight stems, free from blemish, with symmetrical tops and of uniform size. Be sure that they are healthy and free growers—which you can tell by the general appearance of the tree—and have plenty of fibrous roots.

The next point to consider is the preparation of the tree for the change to its new location. If care is used in taking up the tree the roots will be in pretty good condition, but usually there are numbers of broken and bruised roots which must be cut away, well back into the sound wood, taking care in doing so not to sacrifice any of the fibrous roots which can be saved.

The top must be severely thinned out or cut off entirely, so as not to tax the pruned roots too much. It is well in transplanting trees three inches or less in diameter to cut them back to poles from twelve to sixteen feet in length and let them form new tops entirely. I think this, as a rule, will result in the best shaped tree, especially for street planting. Watch the tree closely, and as it commences to throw out the new limbs trim out all undesirable ones before they attain size enough to destroy the symmetry of the tree, and by so doing give the desirable limbs and branches the benefit of all the sap which the roots are sending up.

Having prepared the tree, we will now proceed to prepare its future home. If the soil be sandy or gravelly, enough of it must be removed to make room for three or four cubic yards of good black loam in which to plant our tree; if the soil be already loam or clay, it will be necessary to remove only enough to make room for the roots of the tree and to pulverize the soil to plant in. Before planting it is well to puddle the roots in liquid clay, as that insures against any air being left next the roots and gives good moisture to start with.

In planting be careful to see that the tree stands an inch or two higher than it will eventually, so as to allow for the settling of the earth under and around it; then sift the fine dirt carefully down among the roots, drawing each successive layer of fibers carefully out straight, packing the dirt firmly under and around them as you proceed. When all the dirt is in, put on plenty of water to settle it at once.

If permissable it is a good plan to mulch heavily for a space of three or four feet all around the tree, thus retaining the moisture by keeping the winds and sun from striking the ground adjacent.

As to the proper time to plant, opinions differ greatly, some contending that the spring is the only time, while others claim the same for the fall. I have planted extensively in Minneapolis, both spring and fall, and have been successful in both seasons; therefore, my advice is to plant when most convenient, either spring or fall.

Great care should be taken in transporting from one place to another to keep the roots well protected from sun and wind, thus preserving the natural moisture. Smooth-barked trees should be protected for a year or two (by wrapping them with hay or straw rope or tar paper) from the sun. If this is not done they will be certain to sun-scald and die out on the southwest side, making an unsightly scar and frequently killing the tree outright.

For at least three years after planting they should have an abundance of water unless thoroughly mulched, and especially when planted on streets or lawns that have been graded or filled up with sand.

BEST KIND OF PEAS AND THEIR CULTURE.

L. P. LORD, OWATONNA.

Peas are not my specialty, but I will present a few observations, hoping you may gain a few helpful ideas from what I have to say.

I believe that "Ferry's First and Best" is just what its name implies, though "Carter's Improved" is always good and prolific. For early peas the soil should be warm and light. Like many other vegetables, peas will show the beneficial results of good, rich manure as well as the profits to be gained thereby. This fertilizer must be used judiciously, however, and good cultivation should follow.

Where earliness is most desired, plant only one inch deep, but for quantity and size of peas plant in trenches three to six inches deep and cover with two inches of soil; then, when the vines are six inches high, fill the trenches level with the ground. This insures deep rooting, prevents mildew and lengthens the bearing season.

For the house garden the "Gradus" has proved most satisfactory. It is quite early and has the superb quality of remaining fit for use much longer than any other pea. They are very large and have a fine color, which they retain after cooking.

Two things should be kept in mind in the culture of peas, as paying well for the time expended in doing them: First, keep the weeds down either by cultivation or mulching. I like the latter method best, as it saves time and conserves moisture, besides keeping the lower pods clean and dry. Second, begin to pick the first ripe peas, and keep the ripe ones picked, as this helps the quality and quantity of the later peas.

New varieties are being brought out every year, and there may be better ones next year, but I believe these named are the best at present.

For Late Snap Beans.—I plant some of the pole varieties along a wire netting fence, of the coarser kind, that divides my kitchen garden from the street. Beans are not particular about the soil, and the fun those beans have trying to cover the fence keeps them growing and bearing until frost kills them.

HARVESTING AND MARKETING THE PLUM CROP.

HENRY DUNSMORE, OLIVIA.

Nearly all varieties of native plums bore a full crop the past season, 1899, which ripened evenly and free from disease and insects. Japan plums had no crop, as the severe frost of last winter killed all of the fruit buds.

All varieties of plums should be gathered by hand and should receive as much care in handling and packing as other fruits of a like nature. In gathering we use a basket of convenient size and with the aid of a step-ladder reach the higher fruit.

We have never shipped plums to a distant market, as we find ready sale in our home markets for all the plums we can grow, using the common half-bushel baskets in hauling them to market. Japan plums should be gathered before they are fully ripe and placed in a well ventilated cellar for one week before they are in their best condition to market. I refer to a home market, but if I was shipping to a distant market I would prefer to put them in a cellar at least two days, as it takes considerable time before the most pleasing taste is noticeable.

Native plums should be allowed to remain on the trees until fully ripe, when they should be gathered and placed in a cellar for two days, after which they will be in good condition for market.

Whether cellar treatment improves the quality of the plum for all purposes for which it is used I will not prentend to say, but will leave for this body to decide. But one thing we know from experience, that persons who taste before they buy will invariably prefer plums that have had cellar treatment.

Plum growing in Renville county has been somewhat discouraged from the fact that nearly three-fourths of all varieties planted have been De Soto. Unlike all of the other natives in cultivation, De Soto is not doing well in this vicinity. The tree is healthy, but its fruiting qualities don't come up to the standard; even with good cultivation its fruit seldom attains a size larger than the commonest specimens to be found in the woods, while most of the other natives, such as Cheney, Forest Garden and Weaver, will produce fruit equal in size to that grown anywhere in the state. If one would ask a farmer in this vicinity if he had any plum trees, in nine cases out of ten the reply would be, "Well, yes. I bought some tame plum trees, but they sent me wild plums." Investigation will always disclose the fact that the trees which he considers wild are none other than De Soto. On the other hand, if he should be fortunate enough to get a few trees of any other variety he will be quite willing to admit he has got a tame plum.

Secy. Latham: The first year I was in Minnesota on the farm of a relative of mine near Chaska there were the most beautiful plums. That was in the fall of 1865. I admired them greatly, and the quality seemed to me to be the very best. They were wonderful in size, and we called them as large as eggs. They were extraordinary plums and grew in such a location as Mr. Dunsmore describes, down on an island in a marsh, and they did wonderfully well there. I do not know what became of them. I have noticed on my own place that the plums that attained size and the trees that bore with sufficient prolificness to be profitable were

cultivated on both sides of the row. I had a number of grafted varieties, but the best of the trees were not named; they were much better than the Forest Garden, the Weaver or the De Soto. I named those plums the "Latham." Those trees are now old and broken down and near their end. I gave Mr. Underwood some scions, and I hope he will be able to keep them up. I have often wondered whether their quality and size was not due to the treatment they received in the row. I had one year from a Miner plum tree in the same row something like eight dollars' worth of fruit. I do not like this careless way of taking care of plums. I do not believe it is a good plan. If you are not particular and simply wish a few plums to eat, it does not make so much difference, but if you want a good, profitable crop, give them good care and cultivation. I do not believe any kind of fruit responds more readily to good treatment than plums. They need a rich soil, and they need a good tillage of the ground.

Mr. Jewett: I think what Mr. Latham states is true, that the best plums are found on this bottom land. In Rice county we have groves of plum trees on this bottom land that bear very fine fruit, and I believe it was true of the Aitkin plum that the original tree grew in bottom land.

Mr. Lord: I have seen some very fine varieties growing on the bluff. I believe the De Soto will grow on top of the bluff and thrive as well as at any other place it can be put. We all know that the natural home of it is along the Minnesota river.

The President: I would like to ask about the Japanese plum. I want some one who has had experience to say what the result of that experience is if he will.

Prof. Green: Mr. Lord has had experience with the Japanese plums.

Mr. Lord: I have had a good many varieties, but they are all dead except the Ogon.

Prof. Green: I regard your situation as very favorable for plums.

Mr. Lord: Oh, I don't know.

Prof. Green: Well, I do. (Laughter.)

Mr. Busse: Have you tried the Milton plum, Mr. Lord?

Mr. Lord: I relied upon the experience and judgment of Mr. Webber. He said it was a very nice and handsome plum, but it was not good for anything. The fruit was entirely unsatisfactory. I believe it is really a Chickasaw variety, and they do not do well here.

Mr. Eugene Secor (Iowa): I have a Milton plum tree in my orchard, but not in bearing, consequently I cannot say anything

about its quality on my ground. The records of the last few years enlarge on the subject. I think they state the case that some like it and some don't; that is all there is about it.

Mr. Busse: I would like to ask Mr. Lord what variety of plum he considers the best for home use; the most prolific.

Mr. Lord: I could not give you a definite answer to that question. If you should ask me personally I should say the Rollingstone, and if you should ask others they would each give you a different name.

Mr. Busse: I want an answer from your standpoint.

Mr. Lord: Well, if I were to be tied to one plum I would mention five or six varieties. (Laughter.) I have had the best success with the Rollingstone, Success and Surprise. I have no reason to complain of the Cooper, Stoddard, Gaylord and New Ulm, however.

Mr. Busse: How do you like the Weaver?

Mr. Lord: It bears very well, but the quality is not as good as that of the others I have mentioned.

Mr. Busse: How do you like the Hawkeye?

Mr. Lord: It is a good market plum, but the quality is rather sour.

Mr. Dewain Cook: Is there any better plum for the market?

Mr. Lord: The Wolf sells better with us than the Hawkeye.

Mr. Moyer: Is the Stoddard as hardy as other plums?

Mr. Lord: Yes, I think it is. All the Stoddards on my place were affected with the aphis, while the other trees were not affected at all.

Mr. Moyer: My Stoddard winter-killed, all except one tree.

What to Do with Cheap Berries.—It is a frequent occurrence with fruit growers to have the price for berries go below the cost of production during a glut in the market. What to do at such times, and with the Saturdays' pickings, becomes a serious problem. Raspberries can be evaporated. Strawberries have been made into jam by a successful Washington grower.

He had twelve acres of strawberries in bearing in 1898. His first picking brought $4 per crate and subsequently dropped as low as 50c, so that he stood to lose money on his entire crop. He went to the stores, found 250 pint fruit jars, bought a sack of sugar and on his kitchen stove made 250 pints of strawberry jam. These went onto a closet shelf and stood there forgotten until the following spring. He then sent for some labels, pasted them on, took a couple of sample jars to town and closed them out at 25c per pint.

Last season as soon as the price dropped to $1.50 per crate (24 qts., wine measure), he began to put up jam.

LETTERS FROM PROF. S. B. GREEN.

Munchen, Germany, June 20, 1900.

Probably Mr. L—— has told you of our trip up to Heidelberg, where I left Mrs. Green for sixteen days while I tramped in the Vogelsbergs and Schwartzwold. From there we came here, stopping at Hohenheim on the way, which we visited from Stuttgart. This, I believe, is the oldest agricultural school in Europe. It has about 120 students in winter, is very prettily located, and should think it a good institution. Here is where Wolf did so much to develop agriculture as a science. The experiment station here has a fine new building, finished last year, but the work seems to be chiefly confined to chemistry. The institution seems to be prosperous. One thing that strikes me as very peculiar is the having of beer gardens on the grounds of schools and colleges where they are little remote from town, but it seems to be quite common.

At Stuttgart I visited the private school for boys of Mr. Gaucher. It is really a school for teaching the growing and pruning of fruit trees. Most of the attention seems to be given to pruning trees into curious forms, and as espaliers, etc. His model tree garden is said to be the best in "form trees" in Europe. About twenty students attend here and work in the nursery. Mr. Gaucher was away in Paris, with an exhibit of his "form trees" at the Exposition, with four of his students.

At Munchen I met with the Schenck party again, and, after finding a good pension for Mrs. Green, I went with them into the Bavarian Alps, where I found much in forestry that was of interest to me. On my return I found that Mrs. Green's niece had arrived from Italy, and we all three went to the Oberammergau Passionspiel together. We enjoyed this very much. Oberammergau is about four hours' ride south from here in the mountains. Immense crowds go there to the play, which is held every Sunday, and occasionally an extra play is given. Saturday was a holiday, so it had been decided to hold it on this date as well as Sunday, but the crowd was so great they also held it on the following Monday. Prof. Mayr, professor of forestry, has been very attentive to me here, and our stay has been very instructive and pleasant. Tomorrow we start for Berlin and will stop at Nuremberg, Erfurt and Dresden on the way.

Dresden, Germany, June 27, 1900.

Well, here we are in Dresden in tip-top order, having arrived here from Leipzig last night. Wife determined to get a good pension here, as we are to remain for five or six days, and we have struck it very nice. Found a very nice place conveniently located and have all we could ask for in a pension for five marks each ($1.25) per day. It is quiet, well furnished, spotlessly clean, and the food is good and people pleasant. Here we expect to spend a day on the Elbe, visit the botanic gardens, forest school, etc. It is a beautiful clean city and appears more like a thrifty American city than the old cities we have heretofore been seeing in Europe.

You will want to know what we have been doing since I last wrote you, which I think was from Heidelberg after my return from a trip of about ten days in the Vogelsbergs in Hesse-Darmstadt. Our party then moved south into the northern part of the Black Forest country, where we found forest conditions much different from those we had seen in the Vogelsbergs. The latter consist of rather low mountains or high hills, and most of the land

was formerly used for pasturage or crops, but much of it has been planted in spruce and other trees, as these actually yield higher money returns than agricultural crops, owing to the running out of the land. Here I often saw many acres of good plow land planted in spruce trees, about one meter apart each way, or one by two meters apart. The farms were generally small and the farmers poor, and most of them worked their cows and lived in dirty villages. In the Black Forest, however, conditions are very different. This is a very rough, rocky, mountainous section, with little land that is well adapted to agriculture, and reminded me of portions of New Hampshire near the White Mountains. In order to get out the timber very nice roads have been built, which has resulted in giving many very beautiful drives and has developed it as a summer resort. On this account small hotels, generally entitled "Gasthauses," are found at convenient distances and are visited by thousands, who go on foot, bicycle or in carriage. The better land is almost always used for agriculture, and in forest economies it is considered important to develop the agriculture with the forests, so as to have work and food for laborers near to the work. On this account we occasionally find a piece of land that has been adjudged as more desirable for agriculture than for forests, but very likely not because it would yield more money in crops than in trees but because in the general system of economics it is desirable to mix the two lines. Here we find beautiful swift streams that are full of trout (called here "fourelle"), and many small springs and picturesque waterfalls, all of which, by means of paths and seats and shelters, are made accessible and attractive to tourists. In other words, the section is a great park, which is all the more interesting because of the economic features involved in its management. The extensive system of planting out of trees is not so much practiced here as in Hessen, owing to the fact that "stumpage" is not so valuable, and then natural reproduction by seed is here more easily obtained. In many wide ranges the cuttings are planned so as to secure new reproduction from natural seed production, and no planting is done except occasionally to fill up some small gap. Here I saw the European balsam, or silver fir (Abies pectinata), which makes a magnificent great tree, and which I had never before seen as a timber tree. The hotels here are generally better than in Hessen owing to the large number of tourists who are drawn here. The timber is generally cut in summer and got out in winter. We had every opportunity afforded us of seeing the cutting and the lowering of the logs from the steep hill-sides, by means of ropes, and of other matters connected with the forests. As a rule, the nursery work did not impress me as being so skillfully done as in our best nurseries. The birds are very fond of the spruce seeds, which in one nursery were covered with quite a heavy covering of sphagnum moss until they began to break ground, to keep off the birds. I think we could, perhaps, use this to good advantage, but much care must be taken not to remove the covering too quick in dry weather.

After finishing up our trip in the Black Forest I went to Heidelberg for Mrs. Green, and we changed our base of operations to Munich, but on the way we stopped for nearly two days near Stuttgart, where we visited the oldest agricultural school in Europe. at Hohenheim. About 120 students attend here, and the work seemed to be carried on in a practical and sensible way. It is beautifully located about ten miles from Stuttgart. In the city of Stuttgart is located the private school of Mr. Gaucher, where the students

work in the nursery and learn to train trees as espaliers and in various curious forms. Here are currants and gooseberries gowing on the same stem, three to six feet from the ground, in tree form. When we were there the proprietor was away at Paris with an exhibit of his trees. The people here seem to take great interest in training trees as espaliers and in other curious forms and know very little about the raising of fruit on a large scale as a business. Strawberries and cherries are generally sold by the pound and are used in comparatively small quantities and are marketed in a clumsy way, as a rule, However, here at Dresden, they are offered in boxes in much the same way as with us, but this is the first place I have seen where the custom is at all general. In fact, the agricultural and horticultural methods in Saxony are well developed, and I am inclined to think from what I can see and hear that this is the garden spot of Germany.

After "doing" Stuttgart, which is a very nice, progressive, business-like and beautiful place, we came to Munich, where, after locating Mrs. Green comfortably, I went with our party to the Bavarian Alps, near the Austrian frontier, where we were among snow-capped mountains and saw the forests and people of a remote and rather inaccessible district of Germany. Here we saw a country dance famed as a "schule plattel" and got pretty wet in an Alpine midnight thunder storm. This storm, by the way, was fully equal to the best Minnesota variety. We were able to get dry beds about 12:30 a. m. The scenery here is very nice and famed for its beauty and grandeur. This section was first settled something over 200 years ago by the monks, who in order to induce settlers to come in gave them perpetual rights to timber for their houses, barns, fences, etc., and to cut for fuel and to pasture. These rights still exist and are sold with the farm and add much to the difficulty of carrying on the best forest practice. The oberforster showed me one house covered with tile that he had had covered with tile at his own expense, and even paid a little bonus to do it, as it was believed more to the advantage of the forest administration than to furnish new shingles. Here most of the houses are covered with wooden shingles, which are not nailed on but are held in place by strips of wood, which are weighted with stones. These roofs are generally renewed once in three years. I must add my testimony as to the high coloring of Alpine flowers, so far as I have observed, and they are very beautiful here. Many naturalists have noted this.

After finishing up this trip I went with Mrs. Green and her niece, who joined us here, to Oberammergau and saw the Passionspiel.

We were nicely entertained at München by Prof. Mayr, of the University at Nuremberg. We were much interested in the old walls and towers and moat, which are kept in a good state of preservation and are still the pride of the city. The old moat has been planted out and made into a picturesque park of much interest, as is common with many of these old cities. Here we visited a large German farm of a friend and noted the work with much interest and had a delightful visit, and made many notes. We spent two days in Erfurt, where I was especially interested in the seed farms and where I was given every attention and learned much.

Kindly remember me to our mutual horticultural friends when you meet them, and I trust that you and they are all prospering.

Striped Bug on Cucumber Plants.—I mixed a gill of coal oil with four quarts dry earth and scattered it thickly on the ground about the plants. The bugs soon disappeared.

MY FAMILY VEGETABLE GARDEN.

D. E. GOODMAN, FARIBAULT.

My garden is located on a southwestern slope, sheltered on the north by a wooded hill; on the top of this hill, surrounded with trees, stands my home.

I am not a gardener, not even a farmer, but a book-keeper. My office hours are from 8 a. m. to 6 p. m., consequently my garden work must be done morning and evening, and what I know about gardening, when to plant, what to plant, and how to plant, I have learned largely from reading the Horticulturist and other periodicals of that nature.

Five years ago I began to plant my garden. First, I broke up a strip at the foot of the hill, about 200 feet long east and west, and, perhaps, 40 feet wide, which I planted mostly to corn and potatoes. Each year I have added a few feet of the hillside until my garden is now nearly 100 feet wide. Three years ago last spring I planted two rows of fruit trees the length of the garden, and every spring since I have added a row, until I now have six rows of trees, containing forty apples and crabs, sixteen plums, six cherries, seventeen grape vines and twenty black walnuts, two years old from the nuts. Between the trees I have gooseberries, currants and raspberries.

You have by this time a general idea of my garden or gardens, for the space between each two rows of trees forms a long narrow garden by itself, so to speak. The space between the fence and the walnuts, I planted last spring to sweet corn and pop corn. The sweet corn I made in three plantings, about ten days apart, which gave us a long season of sweet corn. In the next strip I had beans, a bed of onion sets, and new and old strawberry beds. Between the rows of the new strawberry bed I had my peas, also in three plantings.

The next strip was wholly taken up with early potatoes.

The next strip was the truck-garden proper. I began at the west end and sowed a bed of black seed onions; next a bed of parsnips; then carrots; then table beets; then a small bed of old onions to grow sets—and, by the way, this was the third time I had planted the same onions, and I am saving them again to see how long they will keep it up. After the onions came a patch of rutabagas, then a few more beans, then about thirty tomato plants and a few hills of cucumbers. The rest of the strip I gave to the boys for their very own melon patch.

The last strip, on the up hill side of the youngest row of trees, a piece about eight feet wide, I planted one-half to musk melons and one-half to watermelons. Among the grape vines, which are very small, I had petunias, four o'clocks, zinnias, marigolds, and other old fashioned flowers. This part of the garden was very showy all summer and late into the fall.

Of course, my trees and bushes are small and not yet in the way, but I can see that before long I shall have to find some other place for the garden, as the trees have a mortgage on the ground and will soon foreclose.

After I had all planted and while hoeing, wherever I found a vacancy I dropped a bean—I always had a few beans in my overalls pocket—along the sides, around the trees, and in the corners, wherever there was room, I dropped a bean, and no place was wasted.

From this garden—the general plan of which I saw in the Horticulturist some years ago (perhaps the author is present)—I furnished my family

of six healthy, growing appetites, with crisp, fresh vegetables and juicy berries, in plenty and variety, from rhubarb and asparagus to green corn and potatoes—something or other the whole season through and put a lot in the cellar besides.

My wife often says, "What should we do without the garden; half our living comes out of it?"

The past season we had, each in its own proper season, asparagus, green onions, radish and lettuce; gooseberries, currants, strawberries and raspberries; cucumbers, beets, carrots and turnips; green peas, green corn and new potatoes; muskmelons, watermelons and tomatoes; every day something, ripe and fresh, and not to be compared with any store truck. Besides living off the garden all summer we have stored for winter use three bushels rutabagas, four bushels beets, two bushels onions, one and one-half bushels navy beans, one bushel lima beans, five bushels carrots, one bushel parsnips—some still in ground for spring—one-half bushel pop corn and a few Hubbard squash; and again the wife has canned tomatoes, strawberries and raspberries; she has made catsup, pickles and chow-chow; and we gave stuff away because we could not use it all. My winter potatoes I had to buy this year for the first time, because of so many trees. And cabbage, yes, I had 150 plants set out, but my wife's turkeys ate them while I was out camping in July.

Anybody who has a piece of ground, and who is able and willing to study and work, may enjoy the fruits of his own garden. All the work in my garden, after the spring ploughing, was done by myself, by hand, with what help I could get out of two small boys. It kept me busy night and morning, but I enjoyed it and took pleasure in watching things grow, especially the trees. Several of the first planted have begun to bear fruit, and I have eaten apples from my own trees, and last year took a few to the street fair.

In all my garden work I have been very successful. Why? Because when I had something to plant, be it a tree or a cabbage, I took advantage of somebody's experience, as set forth in the Horticulturist. If cut worms or striped bugs threatened my vegetables, or rabbits or bugs my trees, I hunted up some article which told me what to do, and then went out and did it according to my best understanding.

Root Pruning is frequently necessary with all fruit trees where the ground is very rich, producing excessive wood growth and but very little fruit. First remove only the ends of the large feeders, but if this does not accomplish the purpose, prune more severely.

Cultivating with a Rake.—Few people know the use of a rake among little stuff in the garden. There is no tool more important. Get a wide rake, with long, straight teeth not too close together. You can do more work in an hour with it than you can in five hours with any other tool. Rake right across the plants; never fear that you will pull them up. You will be surprised to see how neatly the plants slip through the teeth. Young onions, radishes, beets, cabbage, tomatoes, etc., can be quickly and easily gone over. In plowing radishes, peas, potatoes, corn, etc., when young, they often have to be uncovered. I used to stoop to uncover each plant, but now I take the rake and can uncover almost as fast as I walk.

CRANBERRY CULTURE.

(Facts gathered by U. S. Census Bureau.)

Although cranberry growing is old, this is the first attempt made by the government to gather special and complete statistics in relation to it.

The wild cranberry (or craneberry) grew in natural bogs only. The best bogs are laurel, maple, cedar, tamarack, aspen and balsam swamps. Cultivation consists in clearing away all growth except the vines and in sanding and preparing to flood. The bog is flooded to protect the fruit from frosts and to kill fire worms or other parasites. Among the latter are yellow-headed and black-headed fruit worms, which, if left unchecked, are liable to destroy the entire crop.

Growers remove weeds, add fertilizers, reflood from time to time and spray the vines to kill moths, larvae, tip worms, scale, etc. Where suitable sand is available, all really first-class bogs are sanded regardless of whether or not they can be flooded. This renders cultivation and picking easier and makes the fruit brighter and cleaner.

In some sections, where flooding is not accomplished by natural freshets or the use of artificial dams and sluices, powerful pumping works have been erected. When the weather bureau reports an impending freeze, the pumps are put to work and the bog is covered with water in a few hours, and the crop saved.

There are some dry cranberry fields, artificially planted; but, while productive, they can not be so certainly protected as the floodable bogs.

The number of commercial growers in the United States is over two thousand. They are found mainly in the states of Massachusetts, New Jersey, Maine, Connecticut, Michigan and Wisconsin; but Minnesota, Oregon, Rhode Island, Washington and New York report bogs. The number in Michigan and Wisconsin is on the increase despite a temporary set-back by forest fires.

A new field or bog is made by clipping and thrusting into the earth sprouts from vines not more than three years old.

There are many varieties of cranberries. Over 100 of them, of good keeping and shipping qualities, were raised at the State Experiment Station at Madison, Wisconsin, in 1898, and exhibited at the succeeding cranberry convention. The United States consular officers report about an equal number in the Canadian provinces, the best of which are being transplanted to this country.

The methods of cultivating, picking, screening or grading and marketing cranberries are practically the same everywhere, and more nearly uniform than those of any other branch of agricultural production that covers widely separated areas.

The growers are well organized, the national association having its headquarters at Trenton, New Jersey, and local organizations existing in Massachusetts and possibly elsewhere. They keep a record of acreage and production and gather for their own use certain annual statistics. They also are attempting to secure the adoption and common use of barrels and crates of uniform size, sanctioned by law. What is known as the "western barrel," so fixed by law in Wisconsin, is 25½ inches high; 16 inches in diameter at the heads and 18 inches in diameter at the bilge, inside measure, and must be officially branded, under severe penalties for failure.

The Massachusetts or Cape Cod barrel is slightly different, being 16x17¾x26⅛ inches inside measure, and must contain 100 quarts.

The Wisconsin (legal) or western crate is 22x12x7½ inches, inside measure, and must be branded. The Cape Cod crate, in use also in Connecticut, Maine and New Jersey, is of the same dimensions.

THE WEALTHY.

EUGENE SECOR, FOREST CITY, IOWA.

Nature is ever generous of common things but parsimonious with her treasures. Hundreds of millions of plain, everyday people have been created, but only one Shakespeare. Millions of tons of coal are found for every diamond brought to light. Thousands of bushels of apple seeds have been planted, but only one Wealthy.

About thirty-five years ago, Peter M. Gideon, of Minnesota, obtained a lot of apple seeds from Bangor, Maine. He said that in the lot was one package marked "Cherry crab." From the package so marked he says he produced the Wealthy.

It is the greatest pomological acquisition for the northwest ever disseminated. For northern Iowa, Minnesota and Wisconsin it is worth more than all the foreign importations yet made, for it is not only valuable because of its own merits but for the hope which it inspires.

What Gideon has done in the production of this incomparable apple has lead and will lead thousands of others to renewed and hopeful effort to produce an apple of equal quality which shall prove to be a better keeper. The more it has been tried, the more valuable it is considered.

A. J. Philips, secretary of the Wisconsin Horticultural Society, says: "As a business, all round apple, tree and fruit, the Wealthy discounts by odds in money and satisfaction any apple that ever put in an appearance north of the Iowa and Minnesota state line."

It may not be needed south of latitude forty-two, but north of that it has been a Godsend.

According to the report of our secretary, sent out last June, the Wealthy stands with Oldenberg and Northwestern Greening in hardiness, under the severe test of last winter.

The Wisconsin Experiment Station issued a bulletin on the effect of last winter upon different varieties of apple trees, and the Wealthy headed the list of trees reported least injured.

It is an early bearer of good sized, handsome, red fruit, of finer flavor and higher quality than any other apple grown in the northwest. It is one of the best sellers ever put upon the market. There is more money in it than in any other variety grown north of the parallel mentioned. Although regarded as a fall apple, it keeps well in cold storage and is a money maker when taken out. It is a monument to its originator more enduring than marble. It is a distinct addition to the sum of the world's blessings, and its discoverer will forever be remembered as a public benefactor.

O ruddy-cheeked apple, when kissed by the sun
Till ye blush with a beauty divine,
With flavor distilled from the mildness of June,
What a heavenly mission is thine!

The sour, hardy Duchess, the best of its race,
Was a boon until thou wert made known;
But beauty and quality in thee embrace,
And our tastes have improved where thou'rt grown.

The Northland extols thee, for there is thy home;
In the "Land of the Lakes" wert thou born;
Thou lovest the rich, middle-west, where the loam
Turns to gold both the wheat and the corn.

Ye brought to the prairies the riches of Maine,
Freely emptied the choicest in store
In Gideon's lap for the pleasure and gain
Of the dwellers inland, evermore.

We give thee the crown—thou art king of the North—
And thy reign undisputed shall be,
Till worthier seedlings, with Northwestern birth,
Shall contest apple kingdoms with thee.

GROWING NORWAY SPRUCE FOR PAPER PULP.

T. L. DUNCAN, UNIVERSITY OF MINNESOTA.

Among the many articles of manufacture that the progress and development of the present have made essential, there stands out prominently the one discussed in this paper; an article handled by every one and used for an almost inconceivable number of purposes in every household, office and institution in the state. How few are aware of the source of its material, and fewer yet understand the importance to which that source has arisen in Minnesota! I speak of printing paper, the demand for which has become enormous throughout the United States. Mills everywhere are taxed to their full capacity, and in Minnesota, a comparatively new state in the business, the few mills are extending their works, and others are being planned for.

Why should Minnesota have paper mills? Paper is made largely from wood pulp, obtained by the abrasion of the wood of certain trees, among which spruce is used, perhaps, more extensively than any other, and of this tree there is at present a large quantity growing in northern Minnesota. Further, it has been found advisable to operate pulp and paper mills in conjunction, and to place the combined plant as near as practicable to the growing material. The manufacturers are finding further that it pays to control their own forested lands and to manage the cutting of timber on scientific forestry principles, so as to insure a continuous supply of pulpwood. By careful cutting and re-seeding over a large tract of land, it would be possible for a paper mill to operate for an indefinite period of time, and as the demand for paper in Minnesota bids fair to be a permanent one the mills should be established on a permanent basis and arrangements made for a new growth to take the place of the native woods, which will be exhausted in a few years. The paper-makers of Minnesota are probably not thinking very much about re-seeding at present, but it is the duty of the forester to do some of that thinking for them and to offer the results of his study for their consideration. I will endeavor then to present some facts about the growth of spruce in Minnesota, and will introduce a new tree—that is a tree new to the pulp makers in this state, although well known to horticulturists for thirty years as an ornamental tree.

There are two kinds of spruce native in Minnesota, the white spruce and the black spruce, but no distinction is made between them in pulp making, so that when I examined the stock pile of the Northwestern Paper Co., at Cloquet, last winter, I found both kinds thrown in together. To get at the

average age and growth of the poles on this stock pile, I measured the diameters and counted the annual rings of twelve black spruce and three white spruce poles. Both black and white spruce are slow growers, as the figures will show, but the former is much more so than the latter. The black spruce averaged 4.56 inches in diameter, with an average of 52.92 years; or it required 11.6 years to grow one inch in diameter. The white spruce averaged 9.5 inches with an age of 79.3 years; or one inch growth in 8.35 years. A small black spruce which I cut in the woods near Cloquet, measured at twelve inches from the ground, 3⅜ inches in diameter and was sixty-five years old—an average growth of one inch in 19.26 years. This tree was about twenty feet high, but would scarcely furnish one eight foot pole for pulp. In Bulletin No. 49 of the Minnesota Agricultural Experiment Station I find figures for three white spruce trees, with an average diameter of 6.75 inches and an age of 50.67 years; or one inch in 7.5 years. These figures on black and white spruce are rather discouraging to the prospective pulp-wood operator. But let me now introduce the new tree which I am going to recommend as a more rapid grower.

The Norway spruce, Picea excelsa, a native of northern Europe and Asia, has become a general favorite in the eastern states on account of its easy propagation from seed, its rapid growth and its very graceful and stately form. Wherever planted in Minnesota it seems to do well. On the Experiment Farm, at St. Anthony Park, I measured seven Norway spruces with an average diameter of 4.5 inches and about fifteen years old. These trees having now passed through the earlier struggle for place may be expected to grow much faster for the next fifteen years. In addition to these there are in the forest plantation on the farm about sixty-four other trees which I did not measure, but which are in a very thrifty condition and will in a few years more furnish some excellent data as to rate of growth in plantation on Minnesota soil.

On the Hendrickson place in the same section, there are standing some thirteen Norway spruce trees, which were set out about twenty-five years ago, when they were four or five years old. These trees are now about thirty years old, average thirty-seven feet high, with a diameter of 13.6 inches, or one inch growth in 2.2 years. On the Parker place, adjoining the Experiment Station on the north, are two trees about thirty years old with a diameter of thirteen inches, or one inch in 2.3 years. At the Rosehill Nursery, one-half mile west of the station, there are eleven Norway spruces, said to be about twenty-five years old, and which average in diameter 11.68 inches, or one inch growth in 2.14 years.

From the Hendrickson spruces one could cut twenty-four feet of log-length suitable for pulp. The volume of such a log, twenty-four feet long, with a basal diameter of 13.6 inches and top diameter of four inches would be 13.15 cubic feet; and allowing 400 trees to the acre, it would be possible to raise in thirty years, 5,260 cubic feet of pulp wood, or about 61.16 cords per acre. (86 cubic feet volume=1 cord). If a paper mill uses twenty cords of wood per day and runs 300 days in the year, 6,000 cords would be required each year to keep it going or, in other terms, 96.3 acres of land would have to be cleared of timber each year. For speculative consideration we may make this 100 acres per year, and each year for the next thirty years we will seed to Norway spruce 100 acres of land, or a total of 3,000 acres. Norway spruce matures in from twenty-five to thirty years, after which its

growth is much slower; so at the end of thirty years we will begin to cut 100 acres a year, and will continue to seed or re-seed the same amount of land. The mill has now been placed on a permanent basis and may continue operations indefinitely, occupying only 3,000 acres of land with growing pulp material.

The figures given for the Hendrickson trees should not be accepted as conclusive for all cases, as the rate of growth varies with conditions. In the case of the black spruce cut in the woods at Cloquet, there was an increase of diameter during the last ten years equal to about one-third of the previous growth in diameter. This one-third growth in diameter for the ten years represents a sectional area almost as great as that of the whole fifty-five years previous. The sectional area of the stem with diameter of 3⅜ inches is 8.93 square inches; with a diameter of 2½ inches grown in fifty-five years it was 4.9 square inches. The difference between these two areas is 4.03 square inches; which is the sectional area grown during the last ten years. This increased growth was due, no doubt, to the removal of surrounding timber trees, which over-topped and suppressed young growth below.

The great difference in rate of growth of the Norway and the native Minnesota spruces is more clearly shown in the following summary:

Black spruce in woods at Cloquet, one inch in 19.26 years for 65 years.

Black spruce in stock pile, Cloquet, one inch in 11.60 years for 52.92 years.

White spruce in stock pile, Cloquet, one inch in 8.35 years for 79.30 years.

White spruce in Bulletin 49, one inch in 7.50 years for 50.67 years.

Norway spruce, Experiment Farm, one inch in 3.30 years for 15 years.

Norway spruce, Hendrickson Farm, one inch in 2.20 years for 30 years.

Norway spruce, Parker Farm, one inch in 2.30 years for 30 years.

Norway spruce, Rosehill Nursery, one inch in 2.14 years for 25 years.

Whether or not the wood of the Norway spruce is as well adapted to pulp making as the black spruce, I cannot say, but will make that the subject of further investigation. It is a heavier wood than either the white or the black spruce, with a specific gravity of .47 as compared with .4051 and .458 in the others. The black spruce is a short lived tree on dry land in Minnesota, so that when we find Norway spruce growing to a timber size in thirty years, around a well drained open field, with sandy subsoil, we may assume that it has some advantage over black spruce, which is general in muskegs and other wet places.

To compare Norway spruce with the red spruce of Maine, which is the great pulp wood of the eastern states, I obtained from the Third Annual Report of the Forest Commissioner of the State of Maine (1896), figures showing that in 106 trees 108 years old there were 1,229 cubic feet, an average of 11.6 cubic feet for each tree. And for pine, which he proposes to substitute for spruce as pulp material when the latter is exhausted, 121 trees contained 1,030 cubic feet at an age of fifty-four years, or 8.5 cubic feet per tree. The average for the Norway spruce on the Hendrickson place is 13.15 cubic feet at thirty years, and, supposing that the Maine figures exclude the bark I will deduct one-sixth, which is the allowance made by the Maine commissioner for bark, leaving 10.96 cubic feet for a thirty years' growth. This, as you notice, is greater than the volume for pine at fifty-four years,

and only .64 cubic feet less than the red spruce at 108 years. What Norway spruce might accomplish on Maine soil and under Maine climate or what red spruce might do in Minnesota can only be conjectured.

In closing I would again warn the reader that all comparisons in this paper are of growths under different conditions, but at the same time it is evident that Norway spruce is a rapid grower and will, under proper conditions of culture and fire protection, furnish pulp-wood in twenty-five or thirty years, so that the man who sows the seed may live to participate in the results. And I would recommend that this subject of the rapidity of growth of economic materials be given a thorough investigation, both by the state and by the paper manufacturers themselves.

FRUIT CULTURE IN LAKE SUPERIOR REGION OF MINNESOTA.

R. H. PENDERGAST, DULUTH.

The culture of fruit in northeastern Minnesota has not progressed enough to show very well what can be done here, or how the results will compare with those in the rest of the state. Most of the early settlers thought that we were too far north, and that it was too cold to raise tree fruit successfully, and it was hard to get any of them to set out anything except crab apples and wild plums. For this reason the varieties of large apples that have been set long enough to bear fruit are limited.

Those who did set out a few hardy apples, plums and cherries, find that their trees are healthy; and the fruit compares well with the same varieties raised in other parts of the state. Most of the trees that were set out first were summer varieties.

The late Mr. Smith, of New Duluth, was always very much interested in fruit work, and he set out more trees than any other of the first settlers. But he made the same mistake that those who first set out trees in the southern part of the state did—he set his first orchard on a hillside with a southern exposure, to protect them from the cold; and the result was that most of those trees are dead or injured. The next trees that he planted were on ground that inclined a little to the northwest. This lot of trees were sent to him by Prof. Budd, of Ames, Iowa, and was a collection of Russian varieties and such seedlings as were being tried there at that time.

I was at their place lately, and Mrs. Smith informed me that some of the varieties had died, and there were a few trees that did not look well, but the most of them showed a healthy, vigorous growth, and they had a fair crop of apples last year. We had a very wet, cold season here in 1899, and the later kinds did not ripen as well as usual. She gave me a few specimens to send down to you to exhibit at the meeting, if you thought best.

Owing to the cool summer and shorter season for growth, the late winter apples do not ripen here; but with the moisture from the lake the trees make a healthy growth, and I think that those kinds that will ripen will produce finer fruit than that raised farther south.

The interest in fruit culture is increasing, and many are setting out trees, so that in a few years this part of the state will make a better exhibit of fruit than it can at present. In the older towns along the south shore of Lake Superior, in northern Wisconsin and Michigan, fruit culture has developed much faster. Especially is this the case in Ontonagan County,

Michigan. The timber on the land was cut to supply the copper mines, and when the mines mostly stopped working, the people took up the land and have made good farms, and have good orchards of all kinds of hardy apples, plums and cherries. Those who live back from the lake will have to take the precaution to keep the frost in the ground around their trees later, so that the trees will not open their blossoms until the late frosts are over. Then they can count on a good crop of fruit.

Most of the farms back of Duluth have a plenty of land that is well adapted to growing all kinds of fruit that is suited to the climate. Owing to the cold summers, the apple trees are not affected by the blight as much as they are in the southern part of the state.

Mr. Dartt: Would it be possible to keep the frost in the ground any length of time?

The President: There is enough sap carried over in the winter in the tree branches to cause them to leaf out. I remember when I was a boy at one time (and it shows exactly what can be done without waiting for the frost to come out), a rose bush stood outside the door near a window. One of us was unlucky enough to stick his elbow through a pane of glass, and made a little hole about as large as a quarter of a dollar. After a while it struck me I would go out and take a little branch of that rose bush and put it through that hole. I did so and stuffed it around with cotton batting, and immediately the buds on that little branch began to swell, and it soon came out into full leaf. I do not remember whether it came out in full bloom or not, but I know by the time the snow was gone that branch was in full leaf, and when it was taken through that hole in the window the snow was two feet deep on the outside, and the frost was at least two feet deep under the snow.

Mr. Dartt: There is nothing in that theory that the frost can be kept in. It has been extensively tried, and the fellow who tried it found out there was just six hours difference between the time the frost came out where the ground was protected and where it was unprotected. (Laughter.)

Mr. Jewett: While it is true that while the frost is in the ground it cannot affect the limbs of the tree, yet I saw the result of an experiment in New Jersey in whitewashing a tree. They made the wash thick, and it put the tree back some five or six days.

The President: That is a different thing. This plan was to mulch the ground before freezing.

Onions, unlike most other crops, delight in being grown on ground previously used for onions. An onion patch, to be profitable, must be very rich and free from weeds. It is less work to keep one clean if properly tended the first season.

THE FLOWER GARDEN AN INDEX OF CHARACTER.

MRS. FRANCES L. TOWN, MARKVILLE.

When we start on the journey of life, we find ourselves entire strangers to all our fellow travelers, but nature comes to our relief, by awakening our perceptive faculties, and before we have reached the first station we ask ourselves "Who, and what are they?" Young as we are, the study of character has begun, though it is a long, hard lesson that only the most studious can hope to master before reaching the last station.

As our actions betray our thoughts, so our surroundings express our ideals of comfort and beauty. This is why so many homes are made more attractive by the planting of flowers, and in each of these little gardens you can trace some leading characteristic of the owner, and as the flower garden usually belongs to the women folks, of course it is feminine characteristic.

As you walk along a village street, perhaps the first home you notice will have only the most brilliant flowers in such profusion that you do not notice the arrangement or cultivation. You will find the owner as gay as her flowers; you may enjoy her animated conversation but would not think of asking her advice.

The next is a wilderness of green, with plenty of blue and white flowers, and only a few gay colors. This is a quiet, sensitive woman that will bear acquaintance.

In the next you will notice the arrangement more than the flowers; every line is straight, and every corner an exact right angle. There are no graceful curves. You are not offered any flowers, she is keeping them all for seed. Although a very worthy person, you will find her too precise and particular to be very companionable.

Then you come to a garden with so few walks and so many flowers that you fancy it to be a wild flower garden. Here you are offered a bouquet, and treated in a way that makes you feel as though you had met an old friend; but you may hear some one say that she is not "much of a housekeeper."

The next garden has only two small beds, pansies and sweet peas perhaps. The owner tells you that she only plants her favorite flowers. If you should ever get acquainted, you will find she always looks out for number one.

Now you can sometimes find a flower garden that belongs to a woman that never works out of doors; she tells you John planted it one evening after his day's work was done; the children have done the weeding, and that is why it is such a failure; it does not suit her at all, and she would not try to have flowers only most everybody else has them. You can't help wondering what John thinks of ingratitude.

The next yard is decorated with a wood pile, an ash heap and a clothes line—may be a few other things. In one corner are a few flowers that have been nearly hoed to death. The lady of the house will inform you she does not think much of posies, but her little child likes them awful well; that's why she has them. You are glad she loves and sympathizes with her child, as its influence may change her surroundings.

We have only time for one more. You can see the owner has made the best use of the time and money she had to spare for this purpose. The colors are combined so nicely, the annuals and perennials selected with care

to produce the longest season of bloom; the front yard reaches almost around the house, so the view from the kitchen window is nearly as fine as from the front porch. She can show you the favorite flowers of each member of her family, and in some sheltered spot she will show you some of the tall, old-fashioned flowers that used to grow in mother's garden. To give my opinion of this woman I will borrow a phrase from "Josiah Allen's Wife," and say, "She is always mejum."

From the vast storehouse of nature we have chosen flowers to represent the purest and noblest impulses of the human heart; mothers drop them on the baby's pillow; the bride carries them to the altar, and we fashion them in many forms to be laid upon the casket. They are our life long companions, and through their refining influence one often betrays his true character.

WHAT CAN BE PROFITABLY GROWN IN THE ORCHARD.

S. D. RICHARDSON, WINNEBAGO CITY.

The most profitable crop that I ever saw grown in the orchard was apples. Before the trees are large enough to bear and require the whole ground, there is a chance to raise something else with profit if the requirements of successful apple growing in Minnesota are not forgotten.

That veteran horticulturist of Martin Co., Capt. W. H. Budd, said to me several years ago, that his experience in Minnesota since 1856 had taught him that if we did not want our apple trees to blight we must keep the ground shaded from the direct rays of the sun as much as possible, and my experience agrees with his. Any crop that must be removed in the fall, leaving the ground bare for winter, should not be grown in the orchard. If I wished to kill a young orchard I would leave the ground bare and level in the fall. I saw it tried several years ago at Granada, Martin Co. The trees were half dead in the spring, and it was not a very hard winter either.

A man near Amboy, Blue Earth Co., had a young orchard that he gave good cultivation, but it blighted very badly. He asked Mr. Derby, of Winnebago City, what he could do to stop it. Mr. Derby told him to seed it to clover, and if he cut it leave it on the ground for mulch. He followed Mr. Derby's advice, and his orchard stopped blighting.

Last summer I saw in the garden of Mr. Nims, of Vernon Center, Blue Earth Co., a thrifty young orchard—trees full of apples and apparently not injured in the least by the trying weather of last winter. The rows of trees and space between was occupied with currants and raspberries.

Mr. Mills, of Garden City, had a heavy crop of blackberries in his orchard. He was growing a profitable crop and has a fine young orchard just coming into bearing.

The orchard is a good place for the asparagus bed. Corn can be profitably grown in a young orchard, then husked on the hill, and the stalks left standing on the ground over the winter, if the right kind of a man drives the team when cultivating. Only a man who loves trees and will keep the ends of the whiffletrees away from their bodies should ever venture into a young orchard with a team. If the trees are grown with low tops even the ordinary

hired man cannot get close enough to them after a few years to injure their bodies; the most he can do is to knock the bark off from some of the limbs.

Hogs managed just right are a very profitable crop to grow in the orchard for some men after the trees get big enough. Each one must judge for himself what will pay best under the circumstances and act accordingly, only do not leave the ground bare in the fall and expect to raise apples.

As Mr. Dean, of Blue Earth City, said to me a few years ago, "Why! even our native burr oaks would die if we used them that way."

Mr. Sargent: I would like to ask whether grass or sod should be allowed to grow in the orchard at any time?

Mr. Richardson: You can plow the orchard if you can get the right kind of a man to go in there.

Mr. Sargent: Would you keep the grass out or would you let it sod over?

Mr. Richardson: We will set out some apples next spring, and we will seed it over with clover; clover is all right. The first year you want to keep the grass out, but the next year I would seed it down and let it grow. I have seen quite a good many instances where men grew raspberries in the orchard and covered them in the fall, and then the ground is in good shape.

Mr. Yahnke: Have you ever tried red raspberries?

Mr. Richardson: I have a half dozen Peerless where the ground is planted to raspberries. Where I plant raspberries, I plant them first and then the trees.

Mr. Sargent: I have seen apple trees between rows in plantations of raspberries where they kept the raspberries away from the trees, and they did very finely. The raspberries act as a shade in summer and protect from sun-scald and in winter protect from freezing.

Mr. Wedge: We have about a hundred and seventy-five trees among the blackberries, some Wealthy, and we had to prop up the limbs. I know a man who has to use rails to prop them up.

Mr. Latham: I think Mr. Stellar, of Excelsior, could tell us something of interest along this line of apple culture. He is very successful in growing apples. You probably remember a picture that appeared in the Horticulturist a few years ago showing a Wealthy apple tree loaded with fruit and a family group standing under it collecting them into barrels. That was taken at Mr. Stellar's place, and I think he is in the picture.

Mr. Stellar: Our orchard is an old one; we do not cultivate it, but leave it in sod as we found the place. We have set out some young trees; they were planted some eight years ago and are now in bearing, and we cultivated them; but those that were cultivated blighted very badly last summer, and we thought it was on account

of the cultivation we gave them. Those that were not cultivated seem to do just as well, bear just as well and do not blight at all.

The President: That part that is in sod, do you allow the sod to grow up close to the trunk of the tree or do you keep it clear around the trunk?

Mr. Stellar: It is all sod right up to the trunk.

The President: Is it blue grass?

Mr. Stellar: Well, it is what we call June grass.

Mr. Clark: I want to say a word in regard to Mr. Latham's paper. I am a traveling man and I met last fall at Fargo a traveling man who was selling apples. The firm that he was working for had been down to Missouri buying those apples and shipping them up north, and he would order a carload to this town and to that town, and then he would go there and sell them. They wrote or telegraphed him that they had a full carload of Jonathan, and he wired them to send them to Fargo. He went there and sold every barrel of those apples for $5 a barrel. Now you all know that the Jonathan is one of the best eating apples grown, and the point I want to make is this: I want to impress upon your minds the fact that you can get more money from a good straight carload of Wealthy apples than from any other variety. Send them to a large town and the people will not hesitate to buy them. Go and plant Wealthy apples and raise plenty of them.

Mr. Jewett: I want to add a word in regard to raising a crop in the orchard. We can hardly call our orchard a bearing orchard—the major part was set in '95—but at the same time we set strawberries, raspberries and blackberries. We have now about twelve acres all set out with apple trees, and they made an extra fine growth during the season. We have had no root-killing, no winter-killing and no blight. One thought was brought out in regard to mulching of the trees I want to speak of. Our trees are thoroughly cultivated, and then they are mulched with a very heavy mulch of straw. We water the trees thoroughly, water them every fall, and they go into winter quarters thoroughly wet down and the ground mulched. They make a very fine growth. This year they did not bear, but one can judge whether those things help the growth of an orchard. They are set two rods apart. We run an alley every twenty rods across the orchard, and we know in that way just how much a quarter of an acre is. The land slopes to the southeast about three feet.

Mr. Secor, (Iowa): Any water near?

Mr. Jewett: We have a lake to the northeast, three and one-half miles long and a half mile wide. On the south side the orchard is protected by a growth of timber and on the east side by the lake. Those trees that started last spring came right along this spring.

Mr. Dartt: Which is the best for bearing?

Mr. Jewett: Our best bearing trees are the Virginia crabs. They have borne best, and next to that has been the Wealthy and next to that the Peerless, and the Shields crab bore very finely.

Mr. Latham: I am impressed with the importance of cultivating an orchard. Probably I have had opportunity to read the reports of other societies, the reports of this society and the reports of experiment stations more than any one else in the society, and I have read each paper that is presented before this society at least three times in the work of getting it ready for the press, and I am impressed with the thought that the success that has come to us has been largely in connection with good cultivation. Those that have cultivated have obtained good results. I want to ask Mr. Underwood for his further experience in the orchard that he put under cultivation three or four years ago.

Mr. Underwood: I speak of my own experience, and not altogether that either, but I speak from my own experience and that which I have incorporated in my own from the experience of others. Our president here is the first man who put good sense into me about apple growing. He told me of what he had seen and knew of thorough cultivation. I had been working along other lines, but I just made up my mind I would do what I wanted to do, and that is to cultivate thoroughly, and I presume I am doing it more thoroughly than any one else. I like to go into the orchard and say there is not a weed in it. You cannot do that all the time, but there are times in our orchard when you can almost say there is not a weed in it. The idea is to get the moisture in the soil and keep it there. I think in this climate our failure or success depends upon our having enough moisture in the soil. It is so dry here. Where we are the soil is dry, and a good deal of the subsoil is rather dry; in one orchard that we have the soil is sandy, there is a little mixture of clay in it, and some of it is gravel, but it is a poor place for an orchard.

Mr. Dartt: How deep is the gravel?

Mr. Underwood: When they dig wells they have to go down a hundred feet for water, and it is sand clear down to the water, except there may be a little admixture of clay in strata. It is not pure sand, still it is what we call sandy land. I tried mulching and I tried other methods, but, as I said before, when the president told me they could get along without irrigation in the Great Bend of the Columbia river and talked about a dust blanket I supposed it meant something like three inches of dust such as we find on the road in summer; but it meant simply to stir up the top surface of the soil to prevent evaporation of the moisture and prevent it going off by capillary movement. So now when it has rained, and the ground has dried off with a fine sun and a good deal of wind, just as soon as the ground is in a condition to stir, the team goes in there with a spring tooth harrow, we harrow it over and keep that surface loose, an inch or two inches, just a little on the surface. We have another orchard that is growing on better soil where the sun is so hot in August that sometimes it will bake the apples on the ground, and I call that a pretty hot place for an orchard. Under those conditions we are trying to grow fruit, and I have not found anything that answers our purpose so well as thorough cultivation.

Mr. Sherman, (Iowa): Do you keep that cultivation up all summer?

Mr. Underwood: We keep it up all summer and until snow flies. We did not go into winter quarters this year with dry soil, and last year we had a good lot of rain anyway, but two years ago it was dry in the fall, and I hesitated about cultivating in October, but I said I had started out on that line whether I killed or not, and I kept up cultivation up to freezing weather—

just before it froze up we cultivated some of our ground. That is to say, the ground is loose, and now if a little rain comes it goes right into the ground; none of it runs off. As soon as we can get on in the spring—and we can do that soon on this loose soil—we begin cultivating and keep it up, and I think we are doing just the right thing.

Mr. Dartt: Will you give us a list of five of the best apples for profit in your opinion?

Mr. Underwood: I hardly need to say that the Wealthy is the foremost and best for profit, and the Duchess is a very profitable apple when other people don't have too many of them.

Mr. Burnap, (Iowa): I have never seen a season yet when you could not find a good market for a barrel of Duchess.

Mr. Clark: They do not ship well in the west.

Mr. Philips: How is the Northwestern Greening in that trial orchard?

Mr. Underwood: They are doing splendidly, and the Patten's Greening is a good one.

Mr. Dartt: Would you take the Patten's Greening in your opinion?

Mr. Underwood: I have not met with the Patten's Greening very much. I believe, however, it is going to be one of our standard varieties.

Mr. Dartt: Well, you put that down as the third?

Mr. Underwood: I have not said much about the Okabena. I do not think I ever mentioned it in this society, but I will say it has a better reputation than I supposed it had. It is hardy, bears very young, is very prolific and is a fair quality of apple. It is the best tree we have in our orchard without top-working. Take it in this sandy orchard I mentioned, any one going through the orchard would say it was the best tree we had there. It is better than the Duchess with us. For profit just at this time there is more money made out of a good crab than anything else. They have brought seventy-five cents a bushel when Duchess have brought only twenty cents.

Mr. Dartt: Which is the best crab?

Mr. Underwood: I like the Martha.

Mr. H. H. Pond: I would like to have Mr. Underwood tell us something more about that trial orchard.

Mr. Underwood: It is the youngest orchard we have, and it is the most promising. We cannot cultivate it because it is too steep. It gets the next best thing to it. The soil is dry, but it is close to the stone. It is on one of those bluffs on the Mississippi river. Sometimes we had to roll a stone away in order that we could dig a hole to plant a tree. There is a good deal of clay in the soil, with the natural black soil that comes from ground that has been heavily covered with timber, a growth of oak, white birch and things of that kind.

Mr. Dartt: Do you spray any?

Mr. Underwood: Yes, we spray. I think the sidehill orchard is all right. We can spade the ground over in the spring and put on mulching. It is thoroughly cultivated five or six times around each tree, and every tree has a channel dug to conduct the water to the tree. We do everything we can to give them moisture, and it is surprising to see the beautiful growth and healthy appearance of the trees.

THE PROBLEM OF IMPROVING THE NATIVE PLUM.

O. M. LORD, MINNESOTA CITY.

The problem is unsolved, and I fear that I can throw but little light upon it. I can only mention the lines of work along which we have sought improvement. My first effort was made in 1866. I had planted, since 1854, several varieties of the Domesticas, or those commonly grown at the east, without any success and concluded that it was useless to try those varieties any further, and that our only hope of plums was in the direction of our natives. I selected the best I could find and brought them into cultivation and was very fortunate in finding a very fine variety. I sought to perpetuate or propagate it by selecting the seeds of the finest fruit and growing the trees, but the fruit of these trees was not what I expected. The fruit of no two trees were alike, and none of the fruit was equal in quality to that of the parent.

I have since that time planted seeds nearly every year, with no marked results as to quality. I can make no claim to improvement of the native plum, except by care in the cultivation to increase the size of the fruit. Whatever success I may have reached in producing superior plums has been secured by a selection of varieties. Whenever I could hear of a variety having a local reputation for superior quality, I have, if possible, procured trees or scions and grown the fruit and have had occasion to discard many kinds, as in no respect superior, or that were not adapted to my soil or to my methods. It was supposed, several years ago, that we had gone as far as we could in improvement by selection from the wild ones, or, in other words, that the best varieties to be found had already been brought to notice. But this supposition occurred without taking into consideration the chances of fine production from new seedlings, which chances, though limited, have sometimes resulted successfully.

Mr. Terry has been one of the fortunate ones in growing the Hawkeye, Hammer, Milton and some others; Mr. Raymond with the Forest Garden; Mr. Penning with the Surprise, and Mr. Patton informs me that he has a new one which is superior to any that have yet been brought to general notice. These varieties are so much superior to ordinary wild plums that it may be said here is a marked improvement of the native.

Though it is said that this success has been attained by pollenizing, crossing, or hybridizing, when we consider the immense number of failures in contrast with the success it is found that we have no specific law to be governed by to insure success. Van Mons, the French scientist, discovered several years ago that the plum could be increased in size up to the second generation with the seed; after which it would revert or retrograde in size unless crossed with other varieties, and this law has been lately demonstrated by Dr. Dennis. In crossing the species we know the result is a hybrid, beyond which we cannot safely go in production; but in crossing varieties the character may be changed, combining the good or the bad qualities of both parents.

Many people suppose that the wild plum is stable in character, like the crab apple, the cranberry and other wild fruits, and that its improvement is the result of cultivation. This is a mistake, as no wild fruit is naturally more variable, and upon this fact we base our hopes of improvement.

We have entertained the belief, that by hand pollenizing we could combine desirable qualities, insuring success. The theory sounds plausible, and, as I have shown, the process sometimes succeeds but more often fails, for reasons that we do not know, unless it be want of affinity. Mr. Burbank has experimented, in this direction, more largely than any one else and has produced a very few of great value out of thousands of trials, and he concludes that nature does better work than he can do.

We may here refer to the seedling work of Mr. Gideon, with apples. Out of many thousands he found some good ones, but only one Wealthy. The question arises, must we depend upon nature wholly for improvement of the native plum? Is there nothing for the horticulturist to do? Yes, we can bring varieties together by seeds and by transplanting. That nature might never do. We can care for and plant seeds in such a manner that they will grow and make mature plants, where if left to nature not one in 10,000 would mature. Note the immense number of seeds in many of the small fruits and consider the effect if they should all grow. We can modify the conditions of growth by grafting, budding and giving protection. We would like to dispense with its sourness when cooked; would like to increase the size of the fruit and to diminish that of the seed; to make the pulp more firm; to heighten the color; to make it proof against insects and fungous diseases; to make it better adapted to commercial use in carrying and keeping. Are all these things within our province? Yes, within certain limits, with the help of nature, with what we know and what we may learn, bearing in mind that with all our knowledge and all our scientific skill, we cannot make and verify even the seed of a Wealthy apple nor of a superior plum.

Mr. Harris: The experience of Mr. Lord and a great many others would indicate that our native plums have at some time been under cultivation and have advanced from their natural condition until broken into thousands of varieties, and then it reverted back to its wild state more or less. Here and there there are varieties found along what were once great highways from the copper region to the sunny south, such varieties as the De Soto, Rollingstone, Weaver, etc. I do not presume we can improve those very much by cultivation, but if we are going to improve the plum we have to depend largely upon nature. Nearly thirty years ago I spoke of the time coming when we would have native plums as large as goose eggs, but it has got to be done very gradually. We can only increase from one seed in size and quality two generations. The only way we can do that is to take one variety that has good points and cross it with another good variety, and nature makes the crosses that man can seldom make. That is the line we have to work on.

The President: If we cross two different varieties of any living thing, any biological specimen, the tendency is to go backward. Now take the Rollingstone plum. Out of all the crosses which nature made—and I think nature succeeds better than we do, because nature is at work all the time, continually at work, and produces thousands of specimens where we produce one—the Rolling-

stone had by some crossing been developed. Now when we cross that with a native plum, a poor, weak plum, we should be likely to go backward, and nine hundred and ninety-nine out of a thousand would be very inferior, because there is a fixity of type in those native plums that in crossing for years there will be no sport or new departure from. Now when you plant a plum from that crossing it is still weaker. It only has one-half what the original Rollingstone had. If we keep on crossing the best with the poorest we will seldom get one in thousands of crossings that takes the good points from both parents. When we get that one we must take care of it. Perhaps some one else has been at work in a similar way with other plums, and he has found one that was good. In that way we can add to our number of desirable plums, and then take two or three of those best ones that have in this laborious way been worked out and cross them. A great many think they have made an improvement and stop crossing. We should keep on crossing this new variety, keep up the selection, and by and by we will have something much superior to the first cross. What folly it would be to throw away that fruit, and then go all over it again in this slow, tedious way.

Mr. Elliot: I want to ask Mr. Lord whether he noticed in the Rollingstone any variation in the fruit. Was there any one plum tree that produced better fruit than another?

Mr. Lord: I have found trees that always bear larger fruit than others, but I have never been able to detect much if any difference in quality. The quality will remain the same if the season is favorable. The drouth will affect them, but the quality will remain about the same. The size can be materially increased under different methods of cultivation.

Mr. Elliot: The same tree with some cultivation would produce different plums, that is, as to size.

Mr. Lord: I cannot say as to that. I manure the trees heavily and get much larger plums.

Mr. Moyer: I noticed in some plums, especially the Cheney, the skin became discolored, not a rot, but it became discolored, and those plums were bitter. I would like to know what the trouble is and a remedy for it.

Mr. Lord: It is a fungous disease that affects them more or less, and, while I have not tried it, I have confidence in what Prof. Goff says, that Bordeaux mixture will prevent it.

Prof. Lugger: Sometimes it destroys the whole crop. The application of Bordeaux mixture repeated three times will almost

entirely prevent the trouble. The same disease affects the cherry, and sometimes reduces the crop to nothing.

Mr. Crane: What is the strength of the Bordeaux mixture that should be used?

Prof. Lugger: The plum tree is one of a few trees that is injured by copper, therefore one has to be careful, but if applied early in the season, before the leaves are out, the tree will not be injured.

THE CULTURE OF BEANS.

C. F. GRANNIS, VERNON CENTER.

The selection of a suitable piece of land is perhaps of the most importance in the raising of a good crop of beans. We often hear persons, in speaking of poor land, say, "It will not raise white beans," which might be said of most of the soil in this part of the state, but not because it is poor soil.

While we do raise some beans, our soil is not by any means well adapted to bean culture; this I discovered some years ago, and perhaps my experience may be of some benefit to others.

I have a small field of river bottom land, the most of which is very rich, but one end overflows sometimes and washes badly and is not very productive. I planted a patch of beans in this field, the rows running the long way, some being on the rich land and some on the poor part of the field. Both had the same culture, were plowed with a one-horse plow, hoed and kept reasonably clean from weeds. When I came to harvest them, I found on the poor soil the vines were covered with pods and scarcely any leaves, while on the rich land there were plenty of leaves and but few pods, the only apparent cause for this being the difference in soil. I afterwards put a heavy coat of manure on the poor part of the field and this year planted it to beans again. The result is only a moderate crop of beans, the effect of the manure being plainly seen in the growth of leaves.

As regards culture, I shall have but little to say. Plant after danger of frost is past and cultivate well.

The manufacturers of weeders recommend their use in cultivating beans. I have never tried them, but am inclined to think they would do well, as they thoroughly stir the whole surface of the soil. The harvesting should be done as soon as the pods are mostly ripe and before frost, if possible. There are bean harvesters, but I have never used them, so I cannot speak from experience. I have always pulled by hand, and think possibly I am far behind the times, but for the few we raise here we could not afford to buy much machinery.

They should be stacked by setting a tall pole firmly in the ground. Pile the beans around it, making the stacks not large, but as high as you can, and cover well with coarse grass, or anything else that will shed rain well.

As soon as well dried, thresh by hand or machine, according to the amount raised.

In regard to the best kind. I had a tree bean some years ago that had a stiff stalk and stood up well from the ground, which prevented the soil from being spattered on the pods during rain storms, which will cause the pods to rust. I have also raised the small navy bean, and the quality is excellent; but the best kind is the "baked bean" of the Boston variety.

Secretary's Corner.

HAVE YOU A STATE FAIR PREMIUM LIST?—If not, send to this office for a copy *now* and make your entries early.

INFORMATION WANTED as to whether you have filled out and sent to the secretary the blank sent you to learn what fruits you are growing, etc. Please give this *prompt* attention!

PLEASANT WORDS.—"This is the first year that I have belonged to your society, and I am so well pleased with your work that it will be a pleasure to me to comply with your request. You are doing a noble work, and I am very much pleased with your monthlies; they are most welcome visitors."—J. S.

LIST OF THOSE SENDING NEW MEMBERS IN JULY AND AUGUST.—

P. C. Christensen	1	Mrs. C. F. Doty	1
J. P. Andrews	1	W. W. Pendergast	1
A. K. Bush, Farmers' Institute	36	C. H. Harnden	1

DON'T FORGET—to store your fruit for the winter meeting, and it will be much better to send it to cold storage. If you have no tags for this purpose, send to the secretary for some. Store fruit for this purpose expressly, and do not depend on saving it at the state fair, as some do. Fruit at second hand is not likely to be of the best or keep well.

SEEDLINGS IN THE GIDEON ORCHARD.—A very large number of apple trees are bearing, in many cases profusely, in the seedling orchards of the late Peter M. Gideon. As his son, Ansel, now in charge of the orchard, says: "This is the crop father always wanted to live to see." The number of seedlings bearing will run up into the hundreds. It is hoped to have an exhibit of the best of them at the coming state fair, and such as will keep till then at the winter meeting of the society. It is too early yet to estimate as to their value.

PROF. GREEN'S SECOND LETTER.—The second letter from Prof. Green in the course of his European tour appears in this number. It came very early in the month, but still a little too late to go into the July number. We are specially impressed, as before, with the diminishing size of the world. The forests of Germany are proved to be only twelve days away from the heart of the American continent. Though other letters from the Professor are expected they cannot appear in our monthly before the September number, and before its issue he will be here in person unless some hitch occurs in his plans, which provide for a return the last of August.

LONG LAKE FRUIT GROWERS' ASSOCIATION.—The articles of incorporation and by-laws of this association, organized from among the fruit growers on the north shore of Lake Minnetonka, are published in this number. We commend them to the careful study of all engaged commercially in fruit growing and would suggest the advisability of making a note of where they may be found for future reference. The association is not a theory, but a solid and successful fact, and the constitution and by-laws under which they are now operating are the outgrowth and result of several years' experience. Some similar association should be formed in each neighborhood where numbers are engaged in this business. It will be found that one person can sell the fruit from ten to one hundred growers much better and vastly cheaper than can be

done by the individual growers. Get together in a trustful way and try it. Better prices and lessened expenses will be found the logical result.

Exhibit Fruit at the State Fair.—There are a good many growers of fruit on a considerable scale in our state who have never as yet exhibited at the annual state fair. They would find it a great pleasure as well as profitable to do so, and this year will be a good time to make a start. More exhibitors are needed to take the place of those who grow weary with the work of years and long and faithful service. It is not difficult to exhibit at the fair and carry off premiums. A novice is apt to think he has no show alongside the exhibitor of many years' experience. But your fruit is as good as any ones, and you can select and get it on the ground and in place as well with the right effort. You will find that other exhibitors are only nice, every-day sort of people like yourself and very willing the judges should divide the premiums with you, if you deserve them. New or probable exhibitors are invited to correspond with the secretary of this society who will be glad to give any information on the subject in his power.

The Apple and Plum Crop.—The correspondence of this office indicates that the prospects for the apple and plum crop is generally declining. The long continued drouth, subsequent rains and high winds have had their legitimate effect on trees in some cases already weakened in a measure by a partial winter-killing of surface roots. Orchards that have been well cultivated or mulched are now showing the beneficial effects of this wholesome treatment. There is still, however, plenty of fruit on the trees in most localities, and in some localities, notably in the Lake Minnetonka region, the crop continues to give promise of being a record breaker. A favorable feature this season is the absence of blight, bringing the old Transcendent orchards into unusual prominence. On the whole, it is likely that Minnesota will gather as much fruit this fall as can be sold to good advantage to growers in its season.

Corrections.—There were two mistakes in the July number to which attention should be called. One is a "sin of omission," and the other a "sin of commission." The first is in leaving out the name of the author of the article entitled "A Plea for Nature Study Drawn from Experience." Mrs. M. M. Barnard, the Chairman of the Flower Committee of the Minneapolis Woman's Improvement League, prepared this article at the special request of the secretary for presentation at the summer meeting. It is on a subject just now receiving much attention from those interested in the intellectual training of the young, and in this work Mrs. Barnard has been specially prominent in this section. This correction is being made contrary to her expressed wishes that it should be allowed to stand as printed, but in the interest of the cause it champions we believe that the author should be known.

The second correction is in a famous quotation from Emerson which appears on the first page, which should read "the embattled farmers fired the shot heard round the world." The blunder made had its origin somewhere between the manuscript and the printers' ink, just where is the mystery, but some one other than the author of the article in which it occurs is the guilty party. If "ye editor" knew everything and saw everything unerringly no mistake of any kind could ever occur, but it often happens, as in these provoking cases, that other parties, often unknown in the numbers through whose hands the work passes, are also largely at fault. However, it is laid to the charge of no one in the concrete, and "we" assume it.

COL. JOHN H. STEVENS,

LATE OF MINNEAPOLIS, MINN.

(See opposite page.)

THE MINNESOTA
HORTICULTURIST.

VOL. 28. SEPTEMBER, 1900. No. 9.

In Memoriam.

COL. JOHN H. STEVENS,

LATE OF MINNEAPOLIS, MINN.

DIED MAY 28, 1900, IN HIS 80th YEAR.

A pioneer of Minnesota and one of the founders of our State Agricultural and Horticultural Societies, an honored and much beloved life member of our society, has gone to his reward.

Col. John H. Stevens died of pneumonia, at his home in Minneapolis, on the afternoon of May 28th, at the ripe age of nearly four score years. Greatly beloved by all who knew him and honored by thousands of his fellow citizens, his decease is to them a most afflicting event. He was born in Vermont, near the line of Canada, June 13, 1820, and received his earlier education in the public schools of the east, and later in Wisconsin and Illinois, and in the latter state he cast his first vote in 1842. He was in that state at the breaking out of the Mexican war and joined the army of invasion. At the time the writer first met him, in Gen. Scott's advance from Vera Cruz to the City of Mexico, he held a position in the quartermaster's department, and he served in that capacity until the close of the war. He was an intimate and trusted friend of Brig.-Gen. Franklin Pierce and Col. G. W. Morgan and Maj. Wood, of the 15th United States infantry, and greatly respected by all who had business with his department for the liberality and fairness manifested in the issuance of rations and supplies.

The close of the war found him, as it did thousands of others, in greatly impaired health, and upon his return to Illinois he had contemplated making his future home in Texas and only changed his intentions when he had reached Galena, en route for Texas. There he met John Catlin, a former governor of Wisconsin, who had just returned from a recent visit to St. Paul, and became so interested in his accounts of the beauty of the country, the healthfulness of the climate and the prospects and advantages this upper country offered to settlers, that he resolved to change his course, and so he returned to Rockford for the winter.

Early in the following spring, in company with Henry H. Sibley, Henry M. Rice and others, who were leading actors in the early history of this

state, he came up the river on a steamboat and arrived at St. Paul April 24, 1849. Three months later he had secured permission from the war department to locate a claim on the west bank of the Falls of St. Anthony in consideration of establishing a ferry for transportation of government troops across the river. This was a location which he much admired on his first visit to the falls, which he and his party had reached with their camping outfit on June 27th, when several days were spent in exploring the country. At that time he had purchased a claim, paying for it $200, but before he could occupy it, it was jumped by another party. It being impossible to get a title to claims, his party became weary of a camping life and voted to abandon the colonization scheme, and all but Mr. Stevens and one other left for the down river country. He entered into service for a short time in the store office of Franklin Steele, on the east bank of the river.

The house he built on that tract that fall, where the Minneapolis union depot is now located and to which he brought his young bride the next year, was the first frame house built on the west side of the falls and within the then limits of the now great and prosperous city of Minneapolis. It has since become historic on account of the many interesting events that occurred therein.

And thus he became the first permanent settler and is rightly recognized as the founder and father of Minneapolis. The house was noted for many years as being the center of hospitality as well as of the social, religious and educational life of the young community. In this house a liberal hospitality was dispensed to emigrants, explorers, hunters and neighbors, and often the indians themselves were entertained there. The house was moved from place to place as the city developed, and in 1896 was donated to the Park Board and hauled to Minnehaha Park by six thousand school children.

In 1854 he had 100 acres of his farm surveyed into village lots, the nucleus of the city and embracing its best business portions. It was here that Col. Stevens spent nearly eight years of the territorial period, taking a very important part in most of the enterprises of the times for the advancement of the business, educational and agricultural interests of the territory.

In the fall of 1856 he moved to a farm he had selected at Glencoe the year before and remained there until 1863, when he returned to his old home in Minneapolis.

In May, 1896, he suffered a stroke of paralysis, from which he never fully recovered.

From the beginning he manifested a deep interest in agriculture and everything that would elevate and better the condition of the tillers of the soil, fully believing that upon them depended the greatness and future prosperity and civilization of the state. He was always ready to aid them by wise counsel and stimulate them by precept and example to practice the best methods of farming and stock raising. As a writer on agriculture, horticulture and forestry and editor and publisher of a number of papers during a period of over thirty years, he became well known and was held in high estimation by the people. His was a leading spirit in the organization and sustaining of the State Agricultural Society and other kindred associations that have brought our state into the very front rank for its agriculture, horticulture, education and rural life. In all the papers which he conducted agriculture was given the most prominent place.

He was never an office seeker, but always ready to champion and support the best man for any position of honor or emolument. In the earlier times he was often called upon to serve the public in an official character. He was the first register of deeds in Hennepin county and served several terms in both branches of the legislature. During the Indian uprising he served as brigadier general in the militia and commanded the troops and volunteers sent to the front.

It was as a member and zealous worker in the State Horticultural Society that we knew him the best. His name first appeared on the roll of members in 1868, but the writer knows that he espoused our cause and worked with us from the first and advocated that we ought to receive some aid from the state. At that time he was publishing the "Farmers' Union" and made it the official organ of the society. To his personal efforts and his well known loyalty and hearty support of every movement that would advance the best interests of the state are we indebted more than to any other person for the act of incorporation and provision for the publication and distribution of our transactions, which became a law February 27, 1873. Under this law the first volume of transactions covering a history of the earliest efforts in horticulture, down to and including the winter meeting of 1873, was published the same year. The work of editing and compiling this volume was chiefly done by Col. Stevens, and the result was a volume of great interest and inestimable value to every fruit grower in Minnesota.

He was always present and took an active part at every meeting of the society whenever his health would permit, and no member was better known or more universally respected.

No death that has occurred in our society since its organization is more deeply or widely lamented. The death of such a man is an irreparable loss to every interest for which they have expended the best energies of their lives, and all of us who knew him will always remember with pleasure, mingled with sadness, his sterling character, well tried integrity, uniform courtesy and great liberality.

Col. Stevens' family life was a particularly happy one and covered a full half century. He was married to Miss Frances Helen Miller, at Westmoreland, N. Y., May 1, 1850, and immediately brought his bride to the house he had just completed down on the river bank. That was their home for nearly twenty years, and there their children were born. Six children were born to them. Mary Elizabeth, the first white child born in Minneapolis, died in her seventeenth year. Catherine D., the second child, is the wife of P. B. Winston; the third daughter, Sarah, is not living. Gardner, the fourth child and only son, is a civil engineer, and Orma, the fifth, is now Mrs. William L. Peck, of Clearwater, Minn.; the sixth, Frances Helen, was married to Isaac H. Chase, of Rapid City, S. D. —J. S. Harris.

Best Time to Work the Garden.—Cultivating and hoeing in the early morning when the dew is on the earth is far preferable to doing it in the heat of the day. Arise at 4 o'clock and breakfast at 6 in the summer season. In the meantime devote from one-half to two hours in the garden, hoeing, weeding, cultivating and gathering cool, crisp radishes, lettuce, cucumbers, peas, beans, squash, beets, etc., for the morning and noontime meals. Vegetables gathered when the dew is on them are of the finest quality.

CARE OF THE BLACKBERRY PLANTATION THE SECOND YEAR TILL AFTER HARVEST.

W. H. EDDY, HOWARD LAKE.

This is another indispensable fruit, as it fills the interim between raspberries and other fall fruits, and with the appreciation of its medical value it should have a proper place on every family table during its season.

The second year's care of the blackberry, I think, rightly begins with pinching off the ends of canes when they are eighteen to twenty-four inches high, of the first year's growth, and at the same time thinning canes out, leaving four or five strong canes in a hill. We give the ground thorough cultivation until fall. In the month of October, or just before the ground freezes, we take one man with a spade and heavy leather mittens and begin at the north end of the row, by removing the earth four to five inches deep from the north side of hill. Then the man with the mittens on gathers the canes together and at the same time with his foot gently presses the roots to the north and lays the canes flat to the ground. The man then, with the spade, places enough earth on to keep the canes to the ground. Continue in this way until the plantation is laid down. After freezing weather sets in, say in the month of November, place from four to five inches of rotten straw over the whole bed for winter protection, also to act as a mulch for the next summer until fruiting. In the spring, from the middle to the last of April, take a spading fork or a four-tine hook and, beginning at the north end of the row, remove enough straw and earth to secure the canes and then place them upright and press the earth firmly around the hill; also place the mulching over any bare places.

From the first of May until fruiting time allow the parent canes to keep their strength by keeping all the young canes down, excepting those for the next year's fruiting. (Nurserymen do not always follow this plan.) In fruiting time we use pint boxes, carried in crates holding from six to eight boxes.

As soon as the fruit is picked, we cut out all old wood and take off all straw that will not cultivate in and continue cultivating until fall.

We grow the Ancient Briton and Snyder, but like the Ancient Briton in preference to the Snyder, as they are heavier bearers and easier covered for winter protection.

We find this plan of blackberry culture a success on our low land—rich, black loam and clay subsoil, but it might be unprofitable elsewhere, as the condition of soil, location and climate have a great deal to do with success in fruit culture.

Mr. Philips (Wis.): Why do you use pint boxes instead of quarts?

Mr. Eddy: They sell better.

Mr. Yahnke: Don't the mice bother you in the winter when you mulch with straw?

Mr. Eddy: We do not put on the mulch until the ground is frozen, and we have not been bothered with mice. The best time to put on the mulch is just before a snow storm; if you can do that the snow will keep the mulch on.

Mr. Rogers: Do you consider that mulch necessary for winter protection?

Mr. Eddy: Yes, sir; I do.

Mr. Harris: Do you mulch in the summer?

Mr. Eddy: Yes, sir.

Mr. Harris: What is the best mulching for that purpose?

Mr. Eddy: We take wet, rotten straw.

Mr. Harris: Have you ever used fresh red clover?

Mr. Eddy: No, sir.

Mr. A. G. Wilcox: You then cultivate after fruiting? It makes a good deal of extra work.

Mr. Eddy: Well, it saves my blackberries.

Mr. Haggard: How do you keep the weeds down?

Mr. Eddy: You must put your blackberries on clean ground; then next fall put your mulch on the ground and that keeps it clean, and it will keep comparatively clean until after fruiting; you then take the mulching off and cultivate the ground and continue that until fall, which keeps the weeds out.

Mr. Wright: How late in the fall do you cultivate?

Mr. Eddy: About the middle of September.

Mr. Wright: Do you cultivate that late?

Mr. Eddy: Yes, sir.

Mr. Wright: Does the wood ripen up thoroughly?

Mr. Eddy: It does with me.

Mr. Harris: The best summer mulch I ever tried is green clover; the Mammoth clover is the best. Put it on at the end of the strawberry season, put it on thick, and it will last through the blackberry season, and when you want to do your cultivating it will not interfere because it will be rotten and work into the soil. It is better than a coat of manure.

Mr. Underwood: Do you put it on green?

Mr. Harris: Yes, sir.

Mr. Haggard: Where do you get it?

Mr. Harris: If I were growing blackberries I would grow it on purpose.

Mr. Benjamin: I want to make the suggestion that I would use marsh hay in preference to anything else.

Plan for a Few Herbs.—Every garden should have a plot for herbs, such as sage, dill, etc. As these are mostly perennials they should be planted where they will not interfere with the plowing of the garden.

THE WEALTHY APPLE.

A. W. LATHAM, MINNEAPOLIS.

When, nearly a half century ago, Peter M. Gideon, a resident of Excelsior, Minn., dropped into the ground the chance seed from which grew the tree now known far and wide as the Wealthy, he conferred a very great blessing upon the world. A prominent pomologist is reported to have said that "the Wealthy is the best apple originated in the past twenty-five years," but in the judgment of many well qualified to decide it is the peer of the very best apple that grows, at least as to quality, appearance and prolificness.

How fortunate for our state that added to these transcendent qualities the tree is also hardy enough to winter in this climate and safe to plant as an orchard tree in at least the southern half of the state. As a bearer it has hardly an equal in the whole list of standard apples, and the winter in this latitude is scarcely ever so severe as to cut off the crop, for although the fruiting buds on the tips of the spurs may be injured there are also numerous fruiting buds scattered along the sides of the growth of the year before, which are very sure to be found alive even when the terminal buds have succumbed to the rigors of the winter.

The tree that bears this splendid apple is not absolutely free from faults, and it is well for the planter to consider them.

It blights somewhat, but experience leads to the conclusion that the weakness that comes to the tree as a result of the second fault, overbearing, is largely to blame for this.

The second fault is overbearing, and in this, which is probably its most serious fault, is to be found a cause of injury which often results in the early death of the tree from blight, or apparent winter-killing. The remedy for this is a conscientious thinning of the fruit at an early stage. This would give the tree longer life, as well as greatly improve the size of the fruit that remains.

It is the misfortune of this tree, rather than the fault, that while bearing its large crop it is very liable to suffer from the dryness of the ground which often prevails at that critical time. The remedies for this unfortunate condition are two: cultivation to conserve the moisture already in the ground and irrigation to supply the lack.

Cultivation, to be efficient, should be shallow but persistent, beginning as soon as the ground is dry enough to permit it in the spring, and repeated as soon as dry enough after each rain, and weekly during the periods of dryness. Should the ground be still too dry to permit the tree to hold its fruit, water may be supplied by irrigation.

Plenty of water in the ground for some weeks prior to the ripening of the fruit is indispensable to the harvesting of a crop of full sized, highly colored and richly flavored Wealthys. This may be supplied to the trees directly through a length of tile sunk into the ground near the tree, with its top even with the surface, one to a tree, and put in to remain.

If now the planter has given the attention he should to his Wealthy orchard, as above briefly outlined, has thinned the fruit judiciously, cultivated thoroughly and supplied any extra moisture needed, his fruit will hang on (cyclones excepted) and should be allowed to hang on till it takes in full measure that wonderful color for which this variety is famous. When the

planter has ready to harvest a crop of Wealthy apples in the condition described, he will find a market ready for them at his own price.

An exporter of fruit to England of large experience has said that selected Wealthys, packed and handled properly, could be taken to England by aid of the present cold storage facilities and would sell there at a large profit to the grower. It is probable that Jonathan can take care of this fancy fruit for some time yet, and if the Minnesota grower will get it on the market in the right shape he can dispose of an unlimited amount. Hand picked, wrapped in paper and packed in boxes of one bushel each and sold as fancy fruit, an immediate place would be found for it in the best markets. If the supply were too great for immediate demand its season could be extended indefinitely by using cold storage facilities, and even till summer comes again.

Whoever plants this famous variety in a right location, and is thoroughgoing enough to give it the right care at the right time and to gather and market it right has assured a certain and rich harvest.

The Wealthy will do something for you even under neglect, but scarcely anything responds more promptly to wholesome and right treatment. Try it.

Mr. Philips: I endorse what Mr. Latham says in regard to the quality of the Wealthy. Some eighteen years ago I procured some Virginia crabs, and I thought the Wealthy needed more vigor, so I top-worked. They have been bearing now sixteen years every year, and every alternate year they bear a heavy crop. When I planted those trees I planted a row close beside them of three year old Wealthy on their own roots. They came into bearing and paid for themselves, but they overbore and died, while the Wealthy top-worked still remain, and while they bore heavily last year they have now a large number of fruit buds. That is an object lesson. I plant Virginia crabs every year and graft Wealthy every year. If a man will plant apple trees every year he will always have apples while he lives, and his children will have apples after he is gone.

Mr. Dartt: Did they sprout from the ground?

Mr. Philips: Those that died did not sprout. If a Wealthy dies down let it grow up in bush form, and it will soon make a fine tree and get to bearing again.

Mr. Dartt: Yes, it will if it is not killed too low.

Girdling for Early Fruit.—The value of a vineyard set on low lands is often impaired by the danger of early frosts. Such a plantation can often be made profitable by girdling the vines, which process is simply to remove a narrow ring of bark near the root end of the vine to be treated. Such vines will ripen their fruit a week or two in advance of others and thus escape the frost.

SOME DESIRABLE FORESTRY EXPERIMENTS.

PROF. S. B. GREEN, ST. ANTHONY PARK.

It seems to me that our forestry interests would be helped by having a few experiments started as soon as practicable. It is not necessary to carry on experiments to demonstrate the possibility of securing a stand of young trees upon the land, nor demonstrate what varieties of forest trees may be best grown together, nor to determine the rate of increase in forest trees, for these points can be easily determined by a study of the conditions prevailing in this state, since we can find many localities where nature has brought about conditions which give the very best opportunity to study these matters without any delay; and while it is desirable that studies be made as to the conditions under which the best wood is produced in this state, yet they should not be regarded as experiments.

It does seem to me important, however, that a few varieties of trees be planted here on a considerable scale to determine their value for economic purposes, for which they seem especially promising. I refer especially to the introduction of the Douglas fir, red spruce of Maine and Norway spruce. The Douglas fir, of Colorado, is not nearly as large as those found in the milder climate of the Pacific coast, where it attains exceedingly large size, but this Pacific coast form is not hardy with us while the Colorado form is, and this Colorado form is a rapid grower and makes a good sized log. This tree should be tried by the sowing of seed to test its power of competing naturally with other vegetation, and to determine its rapidity of growth under various conditions. It should also be transplanted on a considerable scale, for which purpose I think it is exceedingly well adapted, as I have moved it very safely. There is every indication that this tree will prove to be a valuable timber tree here and be able to easily reproduce itself. We have on the grounds of the experiment station several hundred seedlings of this tree, which have made very rapid growth. We have raised perhaps six or seven thousand from seed and find that the seed starts easily and surely. The trees seem somewhat inclined to grow crooked when growing in the open, but when crowded I think would easily take on the upright form. The terminal growth seems to be somewhat tender and liable to be frost injured when it is under two feet high, but as it gets older and away from the ground, it holds its leader well. I suggested five or six years ago to Dr. Fernow, at that time chief of the division of forestry, that some experiments be made in determining the value of this tree for commercial lumbering in this state, and further experiments on our grounds at St. Anthony Park and at Grand Rapids give me increased confidence in its probable value for moist lands in this section.

Norway Spruce.—It is unfortunate that so much of the moist land of this section that seems to be especially well adapted to the growing of spruce should be occupied with our black spruce, which is of very slow growth. Some specimens which I have examined have attained a diameter of not more than 1½ inches in seventy years on wet land. It is also a tree that does not stand well upon upland, and is really of very little value. Our white spruce is of rapid growth, but not widely distributed and does not reproduce itself very quickly from seed, and the seed is very difficult to obtain. On the other hand, it is found in general cultivation in this state that Norway spruce holds on nearly as well, even in very severe situations,

and makes fully as good growth as the white spruce, which is a much more rapid grower than the black spruce. I would suggest that, since the Norway spruce has done so very well on the upland of this state for ornamental planting, it be tried on a large scale for the growing of spruce for paper pulp, for which its wood is well adapted. This spruce has distinct advantages over white or black spruce. It grows fully as rapidly as white spruce and produces a large amount of seed, which is a common article of commerce and can be easily obtained in large quantities. It has been asserted by some European foresters that the Norway spruce is not adapted to the dry climate of Minnesota. This is undoubtedly an error, since it is found growing commonly in the older sections of our state. It is a tree that is very easily raised from seed and is found to reproduce itself easily and surely where it is grown in Europe.

The red spruce of Maine is largely depended on there for the large paper mills, and some of these mill corporations have undertaken to manage their spruce lands in a systematic way. This tree is scarcely, if at all, found in this section, and yet it seems probable that it is adapted to our conditions. Any way it is sufficiently promising to make it very desirable to have a good fair trial of it made here. The increased attention which is being paid to the manufacture of paper pulp in this section is due largely to the fact that the spruce supplies of the eastern states are fast being worked to their fullest extent, and also to the great and increasing demand for paper in this section and the states west of us, which makes it important, it seems to me, that careful experiments be made to determine the possibilities of establishing this industry upon a permanent basis. It seems to me probable that on account of the small size of the spruce in this state which are being used for paper pulp it will not be many years before the supply will be exhausted, and it is important that experiments be undertaken at this time along this line in order that they may be of the greatest value to this state and section when their results are most needed.

Prof. Hansen: In thirty years it ought to be two feet in diameter.

Prof. Green: I believe there is a large area of land in this state where the Norway spruce could be grown to good advantage. If we depend on our black spruce, and they are cutting it as small as four inches in diameter, I do not believe the spruce paper pulp industry is liable to last long in this state. I believe that we ought to experiment in raising spruce in the northeastern part of the state.

Prof. Hays: What is the proper size to grow pines to?

Prof. Green: If we were going to live forever I would say grow them to maturity. Prof. Schenck seemed to be much surprised, very much so, in fact, that people here could not see that young trees on land are not worth something. In one hundred years there would be, let us say, fifty thousand feet of lumber to the acre, worth $200.00, clear money. If it is worth that much at that time, having ten years start at that point, then it is worth just one-tenth at the end of the first year less compound interest at 3 per cent for 99

years, and plus the value of the thinnings. Our American people have not yet got to the point where they consider anything in the tree line valuable unless it is immediately marketable. I believe our people could now well afford to let pine grow on their poor land thirty-five years, and that it would pay well.

Prof. Hays: What size would it become?

Prof. Green: On good strong land I think it would attain a size probably up to eight inches.

Mr. Harris: I think twelve inches.

Prof. Green: Well, it would depend on the conditions. It would have to make an exceedingly rapid growth to get up to twelve inches in that time.

Prof. Hays: What are the paper companies paying for spruce per cord?

Prof. Green: I don't know; I think they are cutting it on their own land.

Mr. Harris: I did not think that spruce in forests would grow to any such size, but I am pretty sure that white pine can be produced from ten to twelve inches in diameter in thirty years. I have Norway spruce on my place some twenty years old that are probably fifty feet high and fifteen to twenty inches in diameter.

Prof. Hayes: I visited in Europe where the forests are managed by the government and there were no large trees. There were no trees over a foot in diameter; in other words, their system is to grow trees to ten inches in diameter and then harvest them. Those trees can be grown in fifty years to that size and cut down, the practical way of doing the thing, and that is about the line they are working on. I planted some trees in my boyhood that are already eight inches in diameter, black walnuts, and I am yet a young man. I believe we should try to instil courage into the people, let them believe the work can be done.

Mr. Older: Ex-Governor Larrabee, of Iowa, planted a large amount of white pine. Mr. Hinckley went out with the governor and he showed him that those trees were increasing in value at the rate of one dollar per tree each year, and they were set out thirty years ago. Each tree is gaining one dollar per year. At the market value of $18 per thousand they were figuring that the trees were paying a dollar a year each.

Prof. Hays: How many trees did he plant?

Mr. Older: There were twenty trees to the acre. The governor considered he was making money faster than in any other way he could make it.

Prof. Hansen: There was one remark made by a speaker here that I want to speak of further, and that is the difference in hardiness in trees as related to the source of the seed—as the Douglas spruce from the Pacific coast is tender while the same spruce from Colorado is hardy. The Russians have found that same objection to the tree, and they have planted timber by the thousands of acres on the steppes. I visited many of those plantations. The Siberian larch is simply a form of the European larch, and they have found by actual experiment that it is a superior form and hence they plant the European larch on the steppes. It is superior in that it is an upright and faster grower. I found that the Norway spruce of western Europe killed back and is worthless, while the Norway spruce of Siberia and eastern Russia was absolutely hardy. Hence they plant only the seed from the severest part of the empire. We find the Scotch pine in France kills back, while the Scotch pine of Siberia extends clear across the two continents. The Scotch pine from Siberia is perfectly hardy. Therefore, in all their plantations they pay the greatest attention to the source of the seed. If we introduce any trees we ought to use the native trees, and if we use seed we should always get our seed from the hardiest source.

EVERGREEN SEEDLINGS.

CLARENCE WEDGE, ALBERT LEA.

I did not expect to make any report, but Mr. Latham suggested that I talk a little on some of the evergreen seedlings I am growing and have arranged in one and two year groups on this frame. I did not bring them to advertise the fact that we are growing seedling evergreens; my chief thought was to combat the idea that the red cedar is a slow growing evergreen. That slander has come up almost every year, and as the red cedar is a favorite of mine I wanted a chance to defend it. I do not care to defend the new accusation brought against it yesterday, that it harbors an enemy of our apple trees, as I know nothing about that. The red cedar is a hardy tree that withstands drouth. There is no danger of root-killing with the red cedar. My experience is that as a young tree it is the most rapid growing evergreen we have. I have here on this frame a little exhibit that shows quite clearly the relative growth of seedling evergreens. The upper row represents seedlings of one year's growth, and the one that has made the greatest growth of this age is the jack pine. I think that shows nearly six inches in height. The next best is the red cedar, one year old, which shows a growth of five or six inches. All the others make very little growth the first year. In the lower row we have two-year-old seedlings. They are all familiar evergreens. Here in the middle we have the slow growing (?) red cedar (indicating). It is almost two feet high, about double the growth of the other two-year-olds, and not only that, but it was transplanted at the end of the first year and has thus suffered a shock to its growth that none of the other trees in the exhibit have experienced.

Prof. Waldron: What kind of soil were they grown in?

Mr. Wedge: It is a sort of sandy soil.

Prof. Waldron: We have red cedar at the station eight years old hardly as large as that. They do not do well; they do not do well on black loam.

Mr. Wedge: Are you sure they are from northern seed?

Prof. Waldron: I think I got the seed from Prof. Budd. I made arrangements to get some seed from the Bad Lands.

Mr. Wedge: Ours seem to do equally well on either a sand or clay loam. I have some from the Black Hills that are very nice, but the most beautiful thing I have ever seen in the way of red cedars are those of Mr. Sherman, at Charles City, Iowa. Do they turn brown much, Mr. Sherman?

Mr. Sherman, (Iowa): They have changed a little; they do not keep their silvery color.

Mr. Wedge: I noticed his trees stood the past severe winter perfectly; they are a great acquisition.

Mr. Philips, (Wis.): Is it not a fact that after a few years the red cedar is inclined to dwarf and people have come to get the idea that it is a slow grower from that?

Mr. Wedge: I think after the red cedar has attained an age of ten or twelve years it grows rather slowly, but the average planter wants something that will grow fast at the start. It is a very quick grower in the nursery, and will soon make an excellent hedge and windbreak if it is cultivated. If it is not cultivated it grows very slowly. Speaking of soils, I have two very distinct soils, a yellow clay with a reasonable amount of black earth on top, a stiff clay subsoil, and a more sandy soil near the lake, but on both soils the red cedar grows very nicely.

Prof. Waldron: In the Bad Lands the earth is so hard you can hardly drive a spike into it, and the red cedar thrives very well there, but at Fargo it does nothing.

Mr. Wedge: An occasional inclination to blight is the only objection I have to the red cedar. It is something like blight, but it does not show much as the tree grows larger.

Col. Daniels: That is not the same thing as seen in our black pines?

Mr. Wedge: No, it is not that. It will occasionally be seen on the side branches. I have seen hedges of red cedar blighted around the top and sides. That is a real fault and about the only fault it has. There is one great advantage in the red cedar as a windbreak; it makes a very thick, dense windbreak. The lower

ONE YEAR SEEDLINGS.

1 Jack Pine. 2 Red Cedar. 3 Austrian Pine. 4 Norway Spruce. 5 Ponderosa Pine. 6 Mountain Pine. 7 Scotch Pine. 8 White Spruce. 9 Blue Spruce. 10 White Pine.

TWO YEAR SEEDLINGS—Except the Red Cedar, which was transplanted at one year and is shown at the same age as the others but transplanted.

11 Ponderosa Pine. 12. Blue Spruce. 13 Concolor. 14 Norway Spruce. 15 Balsam Fir. 16 Red Cedar transplanted. 17 White Spruce. 18 Douglas Spruce. 19 Scotch Pine.

branches do not die out. I am very much interested in jack pine, and I am surprised at the growth it makes from the seed and without shade. The jack pine can be grown with perfect success without shade.

Col. Daniels: How long do you shade your red cedar?

Mr. Wedge: I do not shade them at all. I have not had a very long experience in growing red cedar. The seed is very difficult to handle. Really, I must acknowledge that I have just one good stand of red cedar. We gather our seed, rub off the pulp, stratify it in sand, and then bury it so that the top of the box is four or five inches below the surface of the soil, and there it remains until a year from the following spring, about eighteen months, in the ground. It is probably safer to sow the seed in the fall and mulch it well, for if you do not get it sown very early in the spring it will grow in the box and, of course, be spoiled. I tried by soaking the seed in different solutions of caustic potash to avoid this long stratification and found there was a certain solution that would start it the first year. But in that case you want to let your bed stand two years, as a goodly share will not even then germinate till the second year, and by pulling out the first year's crop quite early you can hope for a fair volunteer crop the second year. I think the red cedar should be planted more extensively in the northwest. The Ponderosa pine should also be grown more. It is a great drouth resister. It grows a great deal slower than the Scotch pine for the first few years, but it remains more dense in its lower foliage, and I think is a far more desirable tree. As it gets older, unlike the Scotch pine, it remains thrifty. Here are some little Ponderosa (indicating), one year old. Their peculiar seedling leaves might be likened to baby teeth.

Prof. Waldron: There is one leaf scorched.

Mr. Wedge: Yes, as a young tree it does turn brown quite badly in early spring, and I think that is one objection to this pine.

Mr. Sherman (Iowa): In regard to the Ponderosa pine searing back in the spring. The Austrian pine and the Ponderosa are very similar in appearance; the Austrian is dark in foliage, while the Ponderosa is a bright green. They are both most excellent evergreens after they get older, four or five feet high. They keep their color better than any I know of, but as young trees in the nursery they discolor and are difficult to deliver.

Mr. Wedge: That is a great objection with the nurserymen. They will sear, and our Ponderosa sometimes look as brown as though they were dead. I know when they get to be four or five feet high they remain far more beautiful and bright than many of the evergreens that do not turn so brown in the nursery. That is true of both the Austrian and the Ponderosa. I remember that the Austrian pines that we set out in our yard were an eyesore until they were four or five feet high. My wife used to laugh at me for allowing them to stand and wished me to grub them out. Now there is no evergreen on our place that we like better than the Austrian pine.

Mr. Burnap (Iowa): Have you had any experience with the Platte Valley red cedar?

Mr. Wedge: Not with any trees from that source, but I have learned to be afraid of red cedar that originated from seed far south. A year ago I burned up several good rackfuls of trees I had growing which we supposed were all right. They were claimed to be of northern seed, but

they were not from far enough north. They were badly discolored, and we burned them up.

Prof. Waldron: I think that is the same as the Bad Lands cedar.

Mr. Sherman: As I understand it they are a little more silvery.

Prof. Waldron: Yes, they are very brilliant.

Mr. Sherman: The silver cedar I have growing is distinct from our red cedar. It has this peculiarity, the seed ripens in two years instead of one.

Mr. Wedge: I just want to say one word in favor of the white spruce, especially that form which is native to the Black Hills. It is a little longer leafed than the ordinary white spruce. It appears to be about half way between the ordinary white spruce and the Colorado blue spruce and is, I think, very much more desirable than the ordinary white spruce. It is a somewhat slower grower, but it is extremely hardy and very handsome. Another thing I think every evergreen lover ought to have, and that is the Douglas spruce. It is perfectly hardy with us. It is something like the Norway spruce. That from the mountains of Colorado is perfectly hardy in our climate, but not so that from the valleys of Utah.

Prof. Hansen (S. D.): There is one word I wish to say about the evergreen question. I think the jack pine is one of the best evergreens we have, judging by last winter's experience at our place in South Dakota. It stood better there than the Scotch pine. The red cedar stood well, but not as well as the jack pine. If I could have my choice I would have the silver spruce, but I think the jack pine is especially valuable on account of its rapid growth the first few years. The arbor vitæ is a failure; so is the white pine and the balsam fir. They failed almost entirely.

Prof. Waldron: At Brandon, Man., they grow the white pine that you cannot grow at all. I rather think in parts of North Dakota it would be a rather more severe test than at Brandon.

TOWN AND VILLAGE IMPROVEMENT.

MRS. O. N. OLBERG, OF ALBERT LEA.

(Read before Southern Minnesota Horticultural Society.)

We have heard this aphorism for years: "Make the home pleasant and attractive, and the children will love it and be loth to leave it." Let us change these words, and have it read this way: "Make the town, village and country beautiful, and the inhabitants will love them and be loth to leave them."

Persons having land about their houses or having procured land upon which to establish a home, no matter how limited the area, should carefully study its sub-division and furnishing with a view to making it quite as much a part of the home as are the rooms itself. So with a citizen of any town or village. Having become a resident and established a home, the town in which you live should at once become a part of the home, as the rooms are of the house itself, and it behooves every broad-minded, public spirited person, man or woman, to co-operate with their officials in making their town or village a dwelling place of health and beauty.

Acknowledging this fact, the constitution of the State Federation of Women's Clubs provides for a standing committee, known as the Town

and Village Improvement Committee, the object of which is to study into the needs of towns and villages, to arouse and encourage general interest in the work of improvement and to suggest simple and practical methods for beginning work. The cities are planning constantly to make their surroundings more beautiful, thereby involving the expenditure of vast sums of money. They are awakening to the fact that generous park systems are essential to give them prestige with the great traveling public, to say nothing of administering to the pleasure and comfort of the residents.

The smaller towns and villages need to be aroused to action, to realize the needs and possibilities of their own surroundings. It is a mistaken idea that we are responsible for our own yards only. If we, through education and other advantages, are fitted to keep home grounds in perfect order, it is only part of our duty to do so; the balance of our duty requires us to help others to reach the same standard. Of course, a slovenly kept yard cannot be entered and put to order, but the streets which are the common property of all, the grounds around all public buildings themselves, can be operated upon by arousing public sentiment,and very soon the owners of all unkempt and unpleasant looking places will fall into line and keep step in the march of improvement, if only through self interest in the value of property.

To quote from Miss Danforth's paper: "The work of an improvement association is both suggestive and executive, both preventive and remedial; but it is more suggestive than executive, and more preventive than remedial. It must work through individuals, through city councils and through the legislature. An improvement league should be formed in every town, village or country neighborhood. Plans for work should be decided upon, and the best methods for carrying them out should be thoroughly discussed."

Aside from improvement league or committees of the State Federation of Women's Clubs, there is still another organization doing similar work. It is the Women's Auxiliary of the Minnesota Horticultural Society. Its objects are to advance public interest in improvement of home, school and village grounds, in the observance of Arbor Day, in park and in cemetery work and in flower culture for the house; to study the relation of household economics to flower culture, to aid the horticultural society in the furtherance of its work, and to affiliate with the Minnesota Federation of Women's Clubs, especially in the department of country and village improvement.

In these days of women's clubs, it must be explained that this is a club for both men and women, and the officers are usually men.

Cannot the mental vision picture the outcome of such an order of things. Surely we have a glorious future to look forward to. Mrs. A. E. Paul, street cleaning inspector for the first ward of Chicago, has organized the school children into efficient auxiliaries in the work of keeping the streets clean. The children will be taught the value of sanitation and will be asked to closely observe the condition of alleys and streets in their neighborhoods and make daily reports in the school session. Mrs. Paul says she is determined to devote herself to some means of organization among the children of Chicago in the line of good citizenship, so that boys shall be taught to be honest officials, and not to think that every man in a public position is a thief.

Children are the closest of observers, and let them be convinced they can be really useful and they will work with the greatest enthusiasm. This is true education. It is the beginning at the bottom. It is teaching children that they are a part of the general community and that their influence has its weight. Col. Waring found the assistance of the New York children of utmost value in his big task of renovating that city. The league recommends the organization of local teachers in order to influence the children.

The matter of beautifying the school grounds should receive attention, and when the principal is especially interested the grounds may be made real beauty spots. I would urge teaching the children the care of the plants and the turf, a task not difficult to secure with the co-operation of the teacher. The pleasing effects of the children's arrangement of flower beds which I have seen on several school grounds and window boxes are very commendable, although I regret to say no attempt at flower culture has been made in the schools of my own city.

If a child is taught to be clean and orderly, thoughtful and considerate of the comfort of others, the habit formed will follow him through life and will manifest itself throughout the larger avenues of experience. This thought evidently influenced the town and village improvement committee of our State Federation to put forth the card of "Do and Don'ts." If one child alone is educated to adhere to these suggestions, it is well. One home will be made happy. But if all the children of a community, generation after generation, are similarly brought up, what a paradise on earth we would have. Is it not well working for.

Every town and village should have a park commission, to whom would be instructed the care and management of all public grounds, streets, alleys, roadway, etc. The members should be selected for their interest in the work and the fitness for the position. In the absence of such a commission it is well for the improvement league to co-operate with the park committee of the city council by the arranging for and placing of flower beds, fountains, seats, etc., and above all the mowing of the grass and general tidy appearance, and you need not be surprised if the park commission look so favorably upon the work of the league as to ask them to take full charge of the parks, as is the case with the park commission of my own city. The first year the work was ordered by the ladies and the bills sent to the council for approval and payment. This year a certain amount is appropriated, and the entire supervision is in the hands of the improvement league.

Perhaps you have not heard of Adamless Eden, a pretty New Jersey town governed entirely by women. I read an article stating that men there were a-plenty in the pretty New Jersey town, but that they did not amount to much in the face of 200 women who had gained control of the town. It further states that the common council was a pigmy compared to this women's league. The women had looked up laws that had been dead for years. They have kept the streets clean, have driven bill posters away, have preserved trees from mutilation, have forced careless property owners to keep their lawns well trimmed and their premises in artistic condition, and other big reforms have been accomplished, and it was all through moral suasion, explained Mrs. Wilson Smith, its president, as they had really no legal authority back of them. What they did was done through their influence as women.

A report comes to us from Petaluma, Cal., that the leading women of that place, two years ago, in mass meeting assembled, resolved to teach the men a lesson. The parks of the city were barren weed patches, the streets in many places were deplorable, sprinkling was considered nonsense, so were shade trees, fountains, seats. It had been declared by the city fathers that money could be spent for more sensible things, but fifty wives, sisters and sweethearts took a different view of the matter, and for this reason Petaluma's parks, streets, drives, flowers and fountains are now among the most beautiful in the state of California. The women did it, and are still doing it. This club was organized because of the deplorable condition of the public squares, streets, etc.

Anti-garbage parties are all the rage in the fourth ward of Chicago. Contractor Haurahan says he stands ready to enforce the law in every case, providing the women will stand by him. Mr. Haurahan sees in this movement the solution of the garbage question. "There is no use talking," he says, "the laws on garbage questions will always remain a dead letter unless the women themselves take up the question. No man is going to have a woman arrested for mixing ashes and potato peeling. If a woman wants to throw an old mattress or feather bed into the alley, the men of Chicago cannot hinder her. But let her think other women will look down on her for it, and it makes it a matter of pride for her," he chuckled. Three ladies now form an active committee in the present movement.

In our neighboring city, St. Paul, the women wield a potent besom, and the city officers recognize the services of the new agency. The women of this league have especially interested themselves in the extermination of noxious weeds. They have studied the city ordinance compelling the destruction of burdocks and Canada thistles. The committee has been much assisted by the earnest and eager co-operation of the city officials. The mayor has given special orders to the police to extend every courtesy to members of the league. He also met with them and when asked to speak, said he had come because he had the honor of membership in the league. He was proud to hear how much the ladies had accomplished. The league members were on the road, he thought, to achieve much, and he wanted to accompany them.

A law enacted by the last legislature is of a particular interest just at this time to the street commissioner and road overseers. It provides for the cutting of weeds along the public highways and upon streets and alleys of our villages and cities, and requires that this work must be done not earlier than July 15 nor later than September 1, of each year. The road overseers of the various districts of the several towns of the county and the street commissioners of the villages and cities are the parties named by law to see that its provisions are carried out. By this act the above named officials are authorized to reserve a portion of the road work to do the job, and they do not call out all the road work earlier in the season and thus neglect cutting when the proper time comes. The above named officers now have the authority to order out those parties who have mowing machines, scythes, etc., the same as they now order them out with wagons, shovels, plows or other tools used in road work. This law is one which should be carried out to the very letter, as it would in addition to removing the unsightly forests of weeds along the highway, prevent them from ripening and befouling adjoining fields with noxious weeds.

There are hundreds and thousands of people who seem to be saying: "Our trees must be destroyed, our forests must be destroyed, our lakes must be destroyed." The village improvement association says, and not yet hopelessly, "These things must be saved."

PRACTICAL AESTHETICS.

WARREN H. MANNING, LANDSCAPE ARCHITECT, BOSTON, MASS.

The greatest art of a landscape designer, whether he be a person making this work his profession or a property owner doing his best to make his home surroundings more attractive, lies in the ability to recognize and take advantage of the attractive elements of existing conditions rather than in destroying these conditions and substituting for them mere copies of something that has been done by others. This applies as well to the broad landscapes of a public park as to the mere fragment of a landscape comprised within the limits of a front or back yard.

In designing grounds of any character, one must have a regard for practical as well as æsthetic considerations. Too often, however, it is assumed, and even stated, that æsthetic considerations are of no practical value, yet every man and woman does recognize in one way or another that there is a value in beauty, which is only another name for perfection. It may be that they only recognize the distinction between a soggy, wrinkled, smeared and blackened loaf of bread and one light, crisp, well rounded and delicately browned; or between a bitten, distorted, mildewed, off-color apple and one that is perfect in outline, in color, and free from all attacks of insects and disease; or a skinny, bony, mangy, slab-sided "plug" and a horse clean of limb, well rounded, sleek, healthy and full of life, grace and spirit. Many persons who are keen to recognize beauty in these forms, who fully recognize its value, and who would neglect nothing that would help to bring it about, do absolutely neglect to do anything that will tend to make the surroundings or interiors of their homes grow in beauty from year to year. Such persons will usually keep their places in an orderly and tidy condition, but orderliness and neatness, while they go hand in hand with beauty, are not beauty. You can improve the appearance of a disreputable old "plug" by keeping him in an orderly and neat condition, but you could not thereby make him a beauty.

That you recognize the value of orderliness and neatness, with a place for everything and everything in its place, goes without saying. This condition prevails in the interior of many of the homes and farm buildings where the disordered exteriors do not indicate it, and you will usually find a clearly marked distinction between the best room, the bed room, the kitchen and the woodshed, with something of beauty added to some rooms to distinguish them from others. It is seldom that you find such clearly marked distinctions in the grounds about the farm buildings, however. Usually you do see some planting, either a few trees that are attractive as elements of landscape and often as individuals, if not too overcrowded, or a few unhappy looking shrubs and flowers, unhappy because no one cares for them, and uncared for because they have little reason for existence and not enough beauty to become an object for regard. If you will use your shrubs and flowers in a reasonable way, give them their place and their work

to do, you will care for them. Little do we care in these days for the beautiful woman who is of no use in this world.

Your trees, your shrubs and your flowers should help to make your buildings a part of a beautiful picture. They should be massed against the high blank walls of the barns, sheds and fences, to merge them into the landscape. Are they not now too often the most obtrusive objects in the landscape with their hard angular lines and great bare masses, as conspicuous as a brazen city hoyden in a crowd of quiet country folk and as garishly colored at times, too? All your buildings should grow out of a mass of trees and shrubs, which, in their turn, grow out of and seem to be a part of the landscape. You say this is a purely aesthetic consideration; it is not. You can arrange your fruit trees to be a part of this mass. You need the mass of trees in these places for protection, and belts of trees and shrubs will form the division sometimes in connection with fences and sometimes without, between the different parts of the ground; such as the barnyard with its surrounding fences, buildings and sheds; a service yard, perhaps, at the kitchen door, in which to deposit supplies and set out house wastes; a laundry yard with its sod surface and its surrounding plantations so arranged as to hide clothes from the living rooms and street. These would be the working parts of the grounds. There would be, besides, the front lawn, thrown open to the street in the hospitable country way; and a side lawn or flower garden, so intimately connected with the house that the family could step into it from the living rooms as they step from room to room, and so screened from the entrance and road as to give seclusion. It should be an outdoor apartment of the house, so large, so inviting and so conveniently arranged as to be the common meeting place of the family in pleasant days for meals, for sewing, for neighborly visiting, etc. It may seem rather absurd to suggest more of an outdoor life for the farmer, but many of you will find, when you think of it, that there are some in your household who do not get out of doors as often as they ought to.

When you decide to study out a plan of your grounds, first look about to see what existing conditions there are that may be utilized to give your place a distinction that will set it apart from all others. There may be a fine view or one may be secured by cutting a few trees or moving a small building; there may be a fine tree or group of trees or thicket of native wild shrubs and flowers; or a mossy boulder, or a graceful undulation of surface, any one of which would be an interesting feature of the pleasure ground or out of door living apartment.

When you plan, have regard for the trouble of maintenance; avoid when possible all walks and roads that must be weeded and edged. Walk over the grass or use stepping stones. Make good roads. Plant your shrubs and flowers in thickets so close that they will drive out weeds and care for themselves. Cut your grass with the lawn mower or scythe or a tethered grazer.

After you complete your plan, you may not be able to fully execute it at once, but whatever you do may be directed toward its ultimate execution. Do not assume that all this means much expense or trouble. You can do it all yourself. You can use the native trees, shrubs and flowers, which are as beautiful as any that grow, and are of sufficient variety in size and habit to meet all special conditions. You can collect these for your main plantations, and later add for variety the cultivated plants. If you would know

more of your native plants, look through the files of the Minnesota Horticulturist for the several admirable papers relating to them.

In making plans for the house surroundings, do not forget to consider the views over the farm. Every practical man well knows that thickets of shrubs and many fine trees cannot be retained to a great extent in farm fields without making these fields less valuable for farming purposes. There are usually places, however, on every farm, in swampy places, along stream sides, on steep or barren slopes on ledges, in narrow strips of land along the roadside, at the junction of fields, that can never be made of much value for farming purposes. Almost every reasonable man will see that it is more desirable to retain the trees and shrubs on such land, for it adds to the beauty of the landscape without detracting from the value of the farm. It is often a measure of economy, too, to have the steep slopes covered with a thick native growth in order to prevent them from gullying and to prevent the expenditure of useless labor in keeping them in order. A thicket of trees and shrubs, if let alone, will take care of itself and require no especial attention. If it be sufficiently extensive, it will also be practicable to secure from the growth upon it pieces of timber that are required for the repair of various farming implements, or for firewood, without destroying the few fine trees or the groups of fine trees, that would be reserved as interesting objects in the landscape. Other men, having appreciation of the beauty of fine trees, will be willing to sacrifice a small piece of tillable ground for the sake of preserving now and then a specimen to add to the attractiveness of the fields and meadows.

You say such places harbor weeds and vermin. As a matter of fact there are few harmful weeds in such places, and they can be weeded out without much trouble, and as for vermin, if your Minnesota boys are not able to exterminate them for an inducement or for fun, then I am sadly misled as to their make-up.

If you own extensive tracts of wild land from which you derive no income, especially land having particularly attractive landscape features, do not forget that you may confer a favor upon posterity, and build for yourself a more lasting monument than can be made of marble, by making a gift of such land to your town as a public reservation, where your fellow citizens, who are not blessed with broad acres, can roam at will with that secure feeling of possession that they can never feel when they are encroaching upon another man's land, however amiable that man may be.

To Stop Late Growth.—A tree bearing a heavy crop of fruit is not likely to make a late growth. Trees one or two years planted are more likely to make a late growth, and to be unripe when winter sets in, than the older and larger trees. Such trees should have a cover crop sown about August 1. For this purpose many sow oats. Mr. Morrow, of Michigan, is in the habit of sowing oats, the growth of which shades the ground, assists in catching a little snow in winter time and lessens the freezing and thawing. The following spring, when cultivated in, they add needed humus to the soil. Nurserymen sow oats in young nursery stock for the same purpose. A leading small fruit grower of Wisconsin sows oats among his raspberries and blackberries, to assist in ripening them early in the season.

THE BEE OR NOT THE BEE, THAT IS THE QUESTION.

MRS. C. E. FLITNER, ST. PAUL.

Certainly since the days of Solomon, and we know not just how long before, has mankind been especially interested in observing and investigating all forms of life; earnestly and often laboriously striving to understand the divine plan in nature.

Solomon himself "Spake of trees, from the cedar of Lebanon to the hyssop that springeth out of the wall," and was doubtless familiar with all branches of knowledge. Especially, we believe, did the sciences engage his attention, and his advice to the sluggard has been followed by saints and sages through all the intervening centuries, the humble, wise little ant becoming teacher and inspirer of many notable students and writers.

The study of botany was at first little more than a catalogue and description of known plants, increased through the centuries by each successive writer, as new specimens became known.

About the middle of the seventeenth century, when the number of plants known and described had increased from a few hundred to more than five thousand, the microscope inaugurated a new epoch of the science, for now the structure and organs of plants could be examined more closely, and vegetable physiology became the highest department of botanical research.

Classification, imperfect before on account of lack of knowledge of structure, became more systematic, and when the great Linnaeus and some other earnest contemporary students gave their contribution to the world's knowledge, near the middle of the eighteenth century, a long stride was made toward perfecting a system of classification.

But the science of botany, as we know it today, has so far outgrown even Linnaean proportions as to be scarcely recognizable. Now, a botanist must be familiar with phytonomy, organology, vegetable histology, phylotomy and morphology. Then he may clothe the skeleton of all this knowledge with living flesh and spirit. Then may he sit humbly at the feet of some modest little flower and hearken to the soft flutter of the tiny wings of its insect lover, and learn—if he can—some of the riddles that perplexed students for years. Why and how does this plant attract this particular insect? Is he true to this flower alone? What does he receive and in what coin does he pay for his dinner? In short, what part in the great scheme of nature do these representatives of two great kingdoms bear? Then is the formal botanist become philosopher and seer, a true follower of the inspired Sprengel and Darwin, who so complemented each other's thoughtful observations as to interpret to the world the divine significance of a simple flower.

And what is the secret which remained so long hidden from the questioning gaze of nature students, and which, when partly guessed by the English botanist, Nehemias Grew, in 1682, was scoffed at and disbelieved, even when Sprengel, nearly a hundred years later, discovered the intervention of insects. It is the nuptials of the flowers, fully explained by Darwin less than a half century ago, when the question of "the bee or not the bee" was practically settled. Our school children now know what the wisest never guessed a hundred years ago, of the value and uses of the different parts of plants, their relation to animal life, the interdependence and self-regulating power of the great machinery of nature in all her various depart-

ments. For example, a bee is formed to subsist upon nectar, which is secreted in flowers. Were the flowers themselves thinking, reasoning beings, they could not have devised more clever plans, devices, tricks and pranks to lure the insect to a delicious feast only to make him the flowers' own servant. The feast is never spread till the flowers' organs are just in the proper state of development to assume the right position when the bee enters the doorway. All unconscious of his part in a great scheme, the nectar-bibber, while imbibing, is powdered or plastered with pollen, upon just those parts of the body that will come in contact with the waiting stigma of another flower of the same kind, sure to be within the bee's circuit, and quite as sure to be visited by him. And to make the cross-pollenation sure, the stamens have sometimes shed all their own pollen before the stigma in that flower is ready to be fertilized, or are so arranged that the pollen cannot reach its own stigma. Then there are varieties of flower clusters in which there are blossoms in all stages of development for this same purpose.

Our late lamented true naturalist, Gibson, thus expresses some of the "social customs" of Flora in the reception of invited guests: "The garden salvia slaps the burly bumble bee upon the back and marks him for her own as he is ushered in to the feast. The mountain laurel welcomes the twilight moth with an impulsive multiple embrace. The desmodium and genesta celebrate their hospitality with a joke, as it were, letting their threshold fall beneath the feet of the caller, startling him with an explosion and cloud of yellow powder, suggesting the day pyrotechnics of the Chinese. The prickly-pear cactus encloses its buzzing visitor in a golden bower, from which he must emerge as dusty as a miller; and the barberry lays mischievous hold of the tongue of the sipping bee. The evening primrose, with outstretched filaments, hangs a golden necklace about the welcome, murmuring noctuid, while the various orchids excel in the ingenuity of their salutations. Here one presents a pair of tiny clubs to the sphinx moth, gluing them to his bulging eyes, while the cypripedium speeds its parting guest with a sticking plaster smeared all over his back. Occasionally the welcome becomes aggressive, as in the case of certain arums and milkweeds, the guest being forcibly detained or entrapped for life."

Thus, as the insect is dependent upon the flower for food, so is the flower dependent upon the insect for the propagation of its kind. For it is proven not only that the pollen must be deposited upon the stigma that the ovary may develop seed, but that the pollen from one flower should reach the stigma of another flower to produce the best seed. So various insects and the wind are called to assist their neighbors, the flowers. The plants which grow an abundance of pollen, like oaks, poplars, birches, pines, sedges and grasses, may afford to lose some, for the wind is the agent that unites the essential parts, and as he is not a very careful fellow much is spilled and wasted. So these plants have learned to provide a plenty. Having little need for the service of insects, these plants do not greet our senses with such gay colors and sweet odors as those which have adapted themselves through ages of natural selection and survival, according to Darwin, to the particular insect that serves its purpose best.

What a revelation was this cross-fertilization to those who had considered flowers only as ornamental accessions, designed alone to gratify the senses of superior man, their color, shape, markings, position, merely meaningless freaks!

Every flower that blooms has become "a manifestation of a beautiful, divine scheme, an ever-present witness and prophet of divine care."

Do we know the flowers we meet every day in summer? The homely, common roadside weed is as full of riddles as any conservatory orchids. Observe the size, shape, position of stamen and its relation to the other half, the pistil, and ask why these bright, decided lines point to the nectary, or those spots or hairs happened to grow just there. Also why such variety of color, shape and odor? All these are eloquent sermons, could we only understand. If the nectar is hidden in a deep cup, or sac, it is quite safe to predict that the plant has adapted itself to an insect with a long tongue, as the sphinx moth. If you have patience to watch you will doubtless find this true, and you will know why your honey bee seeks the white, and the bumble bee the red clover. Gibson tells us that, "Some years ago the grangers of Australia determined to introduce our red clover into that country. They imported American seed, and the resultant crop was luxuriant in foliage and bloom, but there was no seed. Why? Because the American bumble bee was not consulted in the transaction. The plant refused to be reconciled to the divorce from its animal counterpart. When the bees were transported the clover flourished in fruition as well as bloom."

He also relates that while studying this most interesting subject he found a group of a certain plant with only staminate blossoms. For some time he looked in vain for the pistillate blossom and at length discovered it, far across a swamp, a thousand feet distant, with the pollen grains upon the stigma, "doubtless a welcome message brought from the isolated affinity afar, by some winged sponsor, to whom the peculiar fragrance offers special attraction." Thus we see that "botany and entomology must henceforth go hand in hand."

A Californian writes in the last Popular Science of "Bees in Relation to Agriculture." He thinks that fruit men are not appreciative enough of the value they receive from bees. That as oranges, apples, lemons, olives, some pears, cherries and plums would not produce half a crop but for the insects, beekeepers should be encouraged to locate in the vicinity of fruit farms.

"So we may learn that even among insects and flowers those who do most for others receive most in return," and "that the forces of nature, whether mechanical or intelligent, are one and all the voice of the Great Creator, speaking to us of His nature and His will."

High Feeding for Plants.—Interesting experiments have been carried on in plant feeding by G. M. Sherman, of Hampden Co., Mass. His plan, in brief, is to supply liquid fertilizers by means of a porous jar buried a foot or more beneath the surface and filled from time to time through a tube projecting above the ground.

The roots of the plant or tree collect around the porous jar and absorb the fertilizers. Patent has been applied for. Mr. Sherman's experiments have been mostly confined to rose bushes, which in many cases appear to have made enormous growth, shoots extending several inches per day in some cases.

PROGRESS OF FORESTRY IN THIS COUNTRY.

GEN. C. C. ANDREWS, CHIEF FOREST FIRE WARDEN, MINNESOTA.

In New Jersey the annual report of the state geologist for 1898 contains over a hundred pages that are devoted to the subject of forestry, comprising, among other papers, a valuable "study of forest fires and wood productions in southern New Jersey," by Mr. Gifford Pinchot, and very richly illustrated. This is, probably, one of the most valuable papers in regard to forest fires that has been published in this country. Mr. Pinchot makes the striking remark that "there is no doubt that forest fires encourage a spirit of lawlessness and a disregard of property rights." The state geologist of New Jersey remarks that "the question of forest protection in New Jersey is really included in the greater problem of the state's water-supply and its conservation." He is of the opinion that the forested regions in the highlands should be reserved and held in forest to maintain water supply. "Their value," he says, "as great gathering grounds for the unfailing supply of pure water to the many sea shore towns and settlements and the cities in the valley of the Delaware is such as to make the reservation of these tracts for this use a question of public importance." The investigation of the forested lands of New Jersey by the state geologist are still in progress, under a law passed in 1894.

Under the title of "Timber Trees and Forests of North Carolina," the geological survey of that state has published an octavo volume of 227 pages, handsomely illustrated and comprising a report on the timber trees of North Carolina, by Mr. Gifford Pinchot, and a report on the forests and forest conditions in North Carolina, by Mr. W. W. Ashe. Among other illustrations there are many small but neat maps, showing the areas in which the different sorts of trees are found and the degrees of abundance of each sort. This report serves as a model for other states to copy and reflects, indeed, great honor upon the state. The work being done on the princely domain of Mr. George W. Vanderbilt, at Biltmore, North Carolina, is a beacon light in the forestry movement.

Last year the forestry commission of the state of Wisconsin made a valuable report to the legislature accompanied by a bill "to establish a system of state forests and provide for the management of the same." The bill, though discussed in the legislature, was not enacted, but probably will come up at the next session. The arguments in the report fully sustained these conclusions, namely, that "the establishment of a system of state forests is a necessity, not only for the protection of the climate and water flow of the state, but for the purpose of providing a sufficient supply of raw material to the various lumber and wood industries of the state,"—that the money expended to establish the system "will, after a reasonable time, return into the state treasury, and the system, once fairly established, will yield a large annual income, that will, to a proportionate extent, do away with the necessity of taxation."

The legislature of Michigan, at its last session, passed an important act creating a forestry commission of three members, charged with a thorough inquiry into the forest resources of the state, the injury being done by forest fires, etc., and to report by bill or bills to the legislature which will meet in 1901. On its recommendation the state land office is to withdraw from sale two hundred thousand acres of land belonging to the

state. The commission is authorized to receive, by deed to the state, from the owners, any tracts of land which, in his judgment, may be suitable as forest reserves.

The report on the trees and shrubs of Massachusetts, made fifty-three years ago by George B. Emerson, one of the school teachers of that state, was one of the important early contributions to the forest literature of this country. Massachusetts still keeps up the good work. Her wood land is worth half a million dollars more than it was thirty years ago. She has an influential Forestry Association, with 239 annual members, eighteen life members and five patrons, of whom several have contributed to its permanent fund over a thousand dollars each. A law in that state requires that each town shall annually elect a tree warden, who has sole charge of and is directly responsible for the roadside trees and shrubbery. There are good prospects that a stringent fire warden system will soon be created. A campaign of illustrated forestry lectures is now in progress, and various committees are studying different matters pertaining to forestry.

The forestry commissions of Maine and New Hampshire are doing much to educate public sentiment on this important question.

It is in the Keystone State (Pennsylvania) where women have been especially active in influencing public sentiment on the forestry question, and, as a consequence, we there see the cause holding its onward course. This is well shown by a law passed the 28th of April, this year (1899), which authorizes the commissioner of forestry to purchase all such unoccupied non-agricultural land as he deems expedient, for the purpose of creating a forestry reserve, and at a price not exceeding $5 per acre; and the auditor general is required to draw his warrant on the state treasurer to pay the grantees.

I think we are all willing that the Empire State of New York should still take the lead in forestry. She has the most efficient staff of any state in the Union, and is expending more money in the work than all the other states combined. The present year her legislature appropriated $300,000 for continuing the acquisition of land in the Adirondacks by the Forest Preserve Board, and $50,000 to extend forest preserves in the Catskills, in the counties of Delaware, Green, Sullivan and Ulster. In all, the legislature of New York, within about a couple of years, appropriated $1,800,000 to buy land for park and forestry purposes in the Adirondacks. About one million acres are held for purposes of recreation by clubs and individuals, and still another million acres are owned by private parties for ordinary purposes. The Catskills, having grander scenery and being much nearer the great metropolis, a movement is on foot to increase the state's holdings in that beautiful region. An excursion ticket from the city of New York to the Catskills by railway, costs only $1.75, and it is, therefore, a great health and summer resort for the masses. There are many excellent hotels and good roads in both important regions. The State College of Forestry, connected with Cornell University, is having good success, and a part of its endowment is a demonstration forest of 30,000 acres in the Adirondack park, and which was purchased at the expense of $165,000. Such facts speak for themselves.

With reference to our own state the facts are in some respects trite. Minnesota has the oldest forestry association of any in the country; and although the state has expended nothing for planting trees in forest regions,

it expends $20,000 annually in bounties for tree planting on the prairies, and in all has expended for that purpose over half a million dollars, a record no other state can show. It is one of the very few states that has tried to enforce a law for preventing and extinguishing forest fires; it has a school of forestry connected with the State University, and the last legislature created a State Forestry Board to administer, on forestry principles, such non-agricultural lands as may be acquired by the state, either by donations or purchase for forestry purposes. In this, as in many other states, it is to be noticed that the press is doing valuable service towards instructing the public mind on the needs of better forestry methods. Women's clubs are also interesting themselves in the question. There are probably about three million acres, in detached localities, of idle non-agricultural land which would begin to earn a good revenue as soon as it could become forested. Our soil and climate being so favorable to the growth of the white pine, the most valuable of all trees, a wise and courageous forestry policy would be of immense benefit. Our state can well be in the front rank on this important question, if it will but improve its opportunities.

Finally, it is gratifying to notice what great progress has been made by the United States government in forestry within recent years. The policy of permanent forest reserves has become established. The United States government has set apart 46,000,000 acres of mountainous lands as forest reservations (not including those in Alaska), and has appointed superintendents and rangers to assist in their administration and their protection from fire. These reservations are now being surveyed under charge of the director of the geological surveys. It is significant that thirty-five pages of the last annual report of the commissioner of the general land office are devoted to the public forests.

On the whole, it would seem that more has been accomplished for forestry in this country in the last five years than has been accomplished for a long time before, and the prospects for the cause are certainly very encouraging.

Seedless Fruits.—The cause of seedless fruits has not been ascertained as yet. There are several other kinds of fruits besides oranges in which seedless varieties occur, as, for instance, in the grape, banana and others. Seedless fruits cannot, of course, be propagated from seed, and in order to propagate these varieties they have to be grafted or budded on seedlings of other varieties of the same kind of fruit. Grafting does not change the character of the graft, the stock serving merely as a medium to grow on, the same as the soil does in the case of cuttings. Seedless fruits can also be propagated from cuttings or layers.

The best known seedless orange is the Bahia, or Washington Navel. The original trees were imported from Bahia, in Brazil, some 30 years ago, by Mr. William Saunders, of the United States Department of Agriculture. They were first grown in the government greenhouses at Washington, and three years later, when enough young trees had been raised, they were sent out for trial to Florida and California. In Florida they have not proved very successful, but in California they flourish beyond all expectation, and bear an abundance of fruit of such high excellence as to supersede all other kinds.

CULTIVATION OF THE TURNIP.

VINCENT REEVES, CHAMPLIN.

On all subjects pertaining to horticultural and agricultural pursuits we should endeavor to get at practical facts. I will state that the turnip is of more importance in some countries than many of you are aware of. That little spot on the other side of the Atlantic known as Great Britain, with an area little more than the states of Minnesota and Wisconsin and a population of 40,000,000 of people, has an agriculture subject to great competition, for it is the dumping ground for the surplus products of the soil for all nations. Comparatively speaking, very few of the agriculturists own the farms they cultivate, and they pay heavy rentals. The soil has been cultivated for centuries, and is more productive than ever, and why? The reason is they are a nation of turnip cultivators, and the failure of the turnip crop would be a greater calamity to the British farmer than a failure of the cereals, for the reason that bread foods could be obtained from other nations, and turnips could not. When I speak of turnips, I mean mangel wurzels and all other kinds pertaining to root crops. It must be borne in mind that the English climate is particularly adapted for the cultivation of root crops. It is nevertheless true that in the plain zone in which we live the turnip is not a crop to be depended upon; perhaps three years out of five we get an abundance of moisture, which is so essential to produce a good crop when other conditions are right.

You may as well dance jigs to a mile mark as to expect a good crop of turnips on poor soil. You would naturally say we want a rich soil to produce a maximum crop of anything. We raise corn and beans on rather poor soil, but if you keep account of your labor and interest on value of land you will find you receive a small remuneration for your labor. The soils best suited to the growth of turnips are those of a free working, loamy character, plowed to a good depth and well manured, and add, if you have any confidence in commercial fertilizers, from 200 to 500 pounds of superphosphates sown broadcast and well harrowed in. With sufficient moisture you ought to get 1,000 bushels per acre, at a cost not to exceed three cents per bushel, which does not include storing. I will tell you how to get them to market in a few minutes. From two to four pounds of seed should be sown to the acre, in rows two and one-half feet apart. As soon as you can see the rows don't wait for weeds, but commence cultivating. On light soils cultivate as soon as they are in their third leaf, which is rough; then with the hoe thin to four or five inches.

Such as the Purple Top Strap Leaf, or the Milan or White Flat Dutch, and such varieties, are the best for market gardeners or family use. There are about twenty varieties of the English turnip, and almost the same number of ruta bagas, among the best varieties of which there are many strains, as Carter's Hardy Swede and Skirvings, while the Monarch Swede Elephant, which has recently been introduced from England, is gaining favor wherever grown. These varieties must be thinned from ten to twelve inches apart.

Some of you may say if we all went to turnip growing what would we do with them? You never want to sell turnips; the market for them is on your own farms. Prof. Shaw has been for several years endeavoring to impress on the minds of the farmers in the northwest the importance of sheep husbandry; he has demonstrated that it is not necessary to run over

a 40-acre lot to produce what really should be produced on ten acres. I would advise all to investigate his method if you have more land than you can grow fruit on. It is simply growing turnips, sorghum, rape, sweet corn and all kinds of forage and feeding it to sheep by folding the sheep on the crop, and the excrements enrich your land and save the labor of hauling and spreading manure.

If you will follow this plan you will find your soil so enriched it will be a pleasure to harvest your potatoes and corn. In the place of forty or fifty baskets to the acre, it will be nearer two hundred. Prof. Shaw's method is not an experiment. I was familiar with it in my boyhood days; that is just the method today that enables the British farmer to pay his taxes to the government to fight the Dutch Boers in Africa with.

Now I seem to hear some of you say, if we all go into sheep, that will be overdone. Never fear! The great state of Illinois does not raise sheep enough to supply the city of Chicago with mutton; the whole of the New England states does not furnish enough to supply the city of New York; and we are importing millions of dollars worth of wool annually. While it is true sometimes there are reverses in that industry, when such is the case you have a rich soil to fall back on that the sheep has created. Another thing we must remember, the vegetarian societies of Europe and America are only in their infancy, as yet, and as long as the human family remain a carnivorous race of animals, it will be better to become a nation of consumers of mutton and less of hog.

My fellow tillers of the soil, when you receive those beautiful illustrated catalogues from the windy seedsman next year with liliputians on ladders climbing to the top of a cabbage head and hand spikes to roll a turnip up an inclined plane to secure it in the wagon, and they call those monstrosities mortgage lifters, and they invite the mossbacks to jump into the band wagon—I suppose they want us to play second fiddle—that is the time, my friends, to paste in your hat, that turnips, sorghum or any other forage that sheep will eat when folded, to enrich the land, is the true mortgage lifter, and don't you forget it!

Mr. Yahnke: I enjoyed the paper very much. Turnips can be grown as a second crop on the farm, after early potatoes. This year I sowed turnips so, and they make a fine stock food. They can also be raised after barley. If the ground is not rich enough put on some rotten manure and sow your turnips on it, and you will be surprised to see what your second crop will produce. I know it will please you. If you sow your seed before the 10th of August, you can raise a good crop of turnips.

Mr. Reeves: I will state to the gentleman that I have raised three crops in a season, on the same ground, and the last crop was turnips.

Prof. Shaw: I was not in the room when the gentleman read his paper; I do not know whether or not he stated the kind of turnip the farmer should grow. That is an exceedingly important matter, the kind to sow.

Mr. Reeves: For a late crop I should sow the Flat Dutch or the Purple Top.

Mr. Brand: I was very much interested in Mr. Reeve's paper. I think the turnip has not heretofore received its due amount of consideration. Let us look back a moment and see what the turnip has done. You go back and learn its history in detail, and you will see that the turnip developed the Polled Angus and produced some of the greatest milking cows on record, and developed the Devons like the Polled Angus and the Scotch Galloway, and how many other breeds of cattle I do not know. The turnip played a most important part in the development and improvement of those great breeds. I think it would be better for the farmers of America if they would pay more attention to the turnip in dairying than they do now.

SOME SMALL EVERGREENS FOR LAWNS AND YARDS.

MRS. A. W. MASSEE, ALBERT LEA.

There is nothing that so adds to the appearance, the homelike look of a place as evergreens, judiciously selected and located. They are beautiful in summer, but in winter they are a joy—such a relief to the dreary prospect of a northern landscape. They are not only a source of pleasure and pride to the possessor, but speak cheer and comfort to every passer-by. The successful planter of evergreens might be (although I think he rarely is), a very selfish person, but that cannot prevent the public enjoying the fruits of his labors. And why should we not plant for the public as well as ourselves? Is it not our duty as far as our circumstances will admit to add to the pleasure, comfort and prosperity of the community in which we dwell? And perhaps in no way may we do this as well as by making our home surroundings attractive, comfortable and cheerful in winter, as well as in summer, by planting evergreens.

Just imagine every farmhouse in this county surrounded by clumps and hedges of evergreens judiciously placed. What a transformation in the face of the country! It would not be recognizable. It would be a different country; I believe a different climate. How much would it add to our comfort and enjoyment? How much in dollars and cents to the valuation of the county? This last would be no mean sum, and the subject might well be studied by those who care more for the financial than the æsthetic side of the question. Yet we see very few evergreens either in country or town. Why? All admit their beauty and usefulness. I believe the main reason is this: it is thought by most people that the conifers are exceedingly hard to manage, very difficult to transplant, and that only a favored few can have any luck with them. And they are partially right. You cannot have any luck with them. They are not built that way. Still, if you know how, and do it, they are just as easily planted and managed as any other class of trees and shrubs, providing the trees, or rather the roots, are all right when received from the grower. In the past, quite a considerable number of evergreens have been planted but the planters mostly failed, because, per-

haps, in the first place, the roots had been made worthless by injudicious handling before being received; or, through lack of knowledge by the planter of the nature and requirements of the evergreen, he simply killed them by his mode of handling and transplanting after coming into his hands in prime condition. Then, again, an evergreen is an evergreen, and he often bought those that were not suitable to our soil or climate or the particular location in which they were planted. In most cases they were a failure, rarely surviving the first twelve months. So planters were discouraged and went back to the cottonwood and willow, which, if you only stuck in a hole, would grow and flourish without care or culture, and they had any amount of luck with them. But now, information in regard to the nature of conifers, their management, mode of transplanting and culture, the best and most suitable kinds for our locality, and the purpose for which they are planted, either as shelter belts around our dwellings or simply ornamentation of grounds, is so widely diffused through our horticultural publications, and by the courtesy of the nurseryman, that there is no reason why any one should not plant at least a few evergreens around his buildings and be reasonably successful, if he will only do as he is told, and reap a rich harvest for his labors.

In planting evergreens, study your grounds, know just where you want to put them and the purpose they are to serve, and then make your selection according to your grounds, and the results aimed for. If your grounds are large you can have more varieties, and more of one variety. You can plant those which are naturally of large growth. Avoid straight lines. Nature does not plant in that way. Do not crowd. It is our most frequent error. The little trees are so small, and we are so anxious to make a show at once we are not willing to wait for growth; in fact, we cannot realize that they can ever be crowded. They will grow much better if not crowded and make far better specimens. Some kinds are beautiful planted in clumps. Even then they should be planted some distance apart, if of the taller growing kinds. Of this class, the white spruce is beautiful planted in clumps at the sides of the grounds, never directly in front, as they would obstruct the view. If there is a view from your window or door that is not desirable, plant a clump of evergreens to intervene. Do not plant too near the house. Give chance for the sunlight. In fact, as I said before, look well to your surroundings, and plant with purpose, always keeping in mind that these small trees will, ere long, overtop your head.

There is a class of evergreens of which I wish particularly to speak, that are very beautiful and are not subject to the objections of the taller growing kinds. These are the dwarf or shrubby kinds. They may be planted any and everywhere, on large or small grounds. They never grow high enough to obstruct the view or sunlight. They may be grown as single specimens, in clumps or in hedges. They are very hardy. I believe they are the easiest and safest to transplant. They retain their beautiful bright green the whole year, and seem particularly adapted to our soil and trying climate. They grow quite fast with good care. I believe any one could succeed with this class, although on large grounds specimens of the larger growing kinds would add much to the beauty and comfort of the place; yet if none but these were grown it would convert many an unsightly place into a thing of beauty. On small grounds, village or city lots, they are just the thing. No plot in village or city is so small that it could not have a single

specimen, or a clump of three or four mountain pine. In summer they are as ornamental as a flower bed—more so on small grounds, and less care; in winter such a rest to the eyes from the prevailing bareness and dreariness of a winter landscape. If every lot in a village or city could thus be adorned with evergreens according to its capacity and situation, in a few years it would assume an entirely different aspect, would not be recognized by the oldest inhabitant. If the property owners of a village or city wish to improve or beautify their town, make it a town to be proud of, talked about at home and abroad, to attract strangers and home seekers, they could do nothing more effective than to invest a small sum of money for each lot in evergreens, and then take care of them. It would be the best investment they ever made. A large and the better class of people naturally desire—will pay considerable sometimes to gratify that desire—to live in a pretty and attractive town. I believe the beauty and attractiveness, either natural or acquired, of a town has much to do with the general morality of that town. A beautiful, homelike place attracts a better class of people. I can hardly believe a really hardened, vicious individual would feel at home in a place whose every lot was adorned to make it a thing of beauty. He would feel out of place and hasten to get out of that place and hie himself to one where the surroundings did not continually remind him of the great Creator. A person of low and degraded habits or instincts never courts the acquaintance of Dame Nature, but rather seeks the slums of the city where his eye never rests on a blade of grass, a flower or a green tree.

I have mentioned the Mountain Pine (Pinus montana). It is the evergreen par excellence for the masses. I can't see why any one should not succeed with it. It is a shrub, very ornamental, hardy, easily grown and may be used to great advantage on either large or small grounds. The Pyramidal Arbor Vitæ is another beautiful little tree or shrub, suitable for both large or small grounds, but particularly adapted to small ones. It grows upright, like the Irish Juniper, and can be kept in perfect pyramidal form. It will bear shearing. It keeps its bright color through the year, as does the Siberian Arbor Vitæ, which is much prettier and seems hardier here than the American Arbor Vitæ. It can be sheared and kept in any form desired, and is very ornamental, either on large or small grounds. There is the Juniper (Juniper communis), hardy here, grows well in dry situations, and can be made very useful and ornamental. For a low hedge or screen we have the Juniper Savin, which leaves nothing desired in the way of hardiness and surety in growing. It never grows over four or five feet, and as it bears shearing closely it can be kept at any desired height. It is beautiful along a drive, for borders of lots, to shut off a back lot from the lawn, or anywhere that a hedge is desired, and nothing in the way of utility or ornamentation is so desirable as a well kept hedge. It is also pretty on small lots as a single specimen or in clumps, and may be sheared to suit the fancy of the planter. These hedges for the first two years should be kept free from weeds and grass by stirring the surface of the soil frequently or by mulching; the former method, I believe, will give the greater growth. After that, with an annual pruning they care for themselves.

In buying evergreens be sure and get two or three times transplanted plants. These, though the tops may be small, will have a large quantity of fibrous roots. It does not matter about the top so much if you have

the roots; the top will come all in good time, but the roots, and lots of them, you must have in order to be sure of success. You might succeed with a large top and less root if you were very careful and painstaking, not lucky; but the chances would be against you. The transplanted plants cost more, but they are worth much more and are the cheapest in the end, if you are planting with a real desire to succeed. It is also good policy for the planter to buy his stock of a reliable grower who has good plants of the varieties desired, as near by as possible, to minimize the chances of removal and transportation. In planting in the lawn, a space in the sod must be cut out sufficiently large to allow the roots to be spread out in a natural position, and some to spare. I should say a space with a diameter three times the spread of your tree, and sufficiently deep to give mellow soil beneath the roots. In planting the roots should not be exposed to the air one minute, and must not be from the time they leave the nursery until they are safely under the soil again. This is the main secret of luck in transplanting evergreens.

Have everything ready before you begin. In planting in the lawn it would be well to have some soil ready other than that taken from the lawn, and have it fine. Having put good fine soil in the bottom of the hole, put in your tree so that when the planting is completed it will stand a little lower than in the nursery. Spread out the roots naturally and proceed quickly to cover them with fine soil, working it in between the roots with the fingers, and shaking the tree to facilitate the work. After getting the roots covered, stamp the earth firmly down, and then put in some more dirt and stamp. Have the soil very firm around the roots. The surface of the soil should be left loose, say, about two inches deep, to prevent baking, and allow the water to penetrate the soil. If you wish trees to do well you must keep the sod cut away from them and keep the soil stirred with a hoe, or else mulch them. I think they grow faster if you stir the surface soil frequently and not mulch. I certainly would do this the first year or so after planting. For mulch on the lawn I would prefer gravel. It is neater and, perhaps, will keep the grass out better than anything else. You must fight the grass for best results until the trees are large enough to care for themselves. We have used lawn clippings as a mulch with very good results.

If you have transplanted trees and set them properly, they will need no shading, and you can be reasonably sure that a large per cent will live and thrive, with ordinary care. This is especially true of the dwarf kinds. I would not advise you to buy expensive transplanted trees and just chuck them in a hole, as you would a cottonwood or willow, and expect them to thrive or even live. "What is worth doing at all is worth doing well." We do not plant for ourselves alone but for future generations.

Carbon Bisulphide is a liquid that is so volatile it quickly becomes a gas. This gas is deadly when inhaled. Hence it is great stuff for killing prairie dogs, woodchucks, skunks, etc., in their holes or vermin in buildings that can be tightly closed. Now its use as a fertilizer is suggested. Applications of carbon bisulphide increased to a marked degree the yield of oats, corn, potatoes and beets in European experiments, but why it should do so has not been explained.

HOW THE FARMER GROWS BLACKBERRIES.

G. W. ANDERSON, LONG LAKE.

The farmer usually plants his blackberries with the expectation of taking good care of them and of getting bushels of this delicious fruit; but, alas, he has too many irons in the fire, so some will get burned. Small fruit not being with him a money crop, he looks after his field crop first, and, if he has any time to spare, his garden and fruit afterwards. Some are fortunate enough to have a good wife to look after them and make them care for the garden first, but usually the small fruits are left to take care of themselves. Of all fruits that are grown there is none that will disgust him more than to run into his blackberry patch, and especially if it happens to be after dark, while trying to catch the pigs or calves that have happened to get out of the pen. The blackberries, being left to themselves, in two or three years, if they happen to survive the first summer, which is seldom the case, will have grown into a perfect jungle, almost hog proof and boy proof. Then, if there should be any berries, he must wade through to pick them. Thoroughly disgusted with his failure and especially if he tries to cover the patch, as he has been told he must in order to succeed, he hauls up loads of straw or old hay, thinking that must answer the purpose, as he can not cover with soil, which he finds out to his sorrow. But, alas, when spring comes he finds the mice have girdled most of the canes. So for all his work and trouble he gets but a few berries. So, when he and his good wife review the failures and successes of their small fruits some long winter evening, he—not his wife—comes to the conclusion that he can buy blackberries cheaper than raise them.

A lady near this city told me the other day that they had blackberries once, but had them all grubbed out, as neither she nor her children dared to go near them. "Would as soon have barb wire strung here and there in her garden as have blackberries there."

The blackberry will never be a popular fruit with the average farmer until they have been taught how to take care of them, and that they must be taken care of to be a success. There are exceptions, but where I have seen one fine patch, I have seen ten that have been almost as described.

Nearly all farmers who have started to grow small fruits have a variety, so that they can have fresh picked berries during two or three months of the summer: First, the strawberry, then the red raspberry, currant, gooseberry, black raspberry and, last of all, the blackberry.

The blackberry is a native of this state, and, no doubt, ere the foot of the white man trod its soil, when the fawn bounded over its hills and drank of its streams, the wild savage regaled himself with this delicious fruit.

If there is anything that will make a western farmer's mouth water, it is a sight of a fresh dish of blackberries sprinkled with sugar, and some rich, sweet cream poured over them. I have never known of a serious case of cholera infantum or other summer complaint where children or, even, adults had free access to fresh, well ripened fruit, and I consider the blackberry the healthiest of all. In behalf of your bright-eyed children and noble, self-sacrificing wives, I appeal to the farmers of the northwest to provide a generous supply of home grown fruit for their families.

HORTICULTURAL EDUCATION IN OUR COMMON SCHOOLS.

JONATHAN FREEMAN, AUSTIN.

All who have given thoughtful consideration to physical, mental and character building, will unhesitatingly acknowledge that the environment of a person, until twelve or fifteen years of age—such environment including birth, food, clothing, example, teaching, reading, conversation, associates, employment, etc., will always be a controlling influence throughout his entire life. To me it seems surpassingly strange that, while during the past twenty-five years our lawmakers have provided facilities for instruction to the general farmer and horticulturist in the way of state schools and experiment stations for young people over fifteen years of age, they did not at the same time provide ways and means for presenting elementary instruction in the same line in the rural or common district school. The former are much better than nothing, but they cannot accomplish all the work desired until pupils are prepared in their earlier years to appreciate and utilize the later and fuller opportunities.

Within a few years Nature Studies have been introduced in our high schools. This is well, but how much better to also have elementary work in the same line in the common schools. All who are deeply interested in the best welfare of the masses are decrying the fact that so many of the farmers' children are rushing to the cities. It is not strange, when we consider the little that has been done in the way of educational laws to interest and instruct the child in his surroundings upon the farm. Even the laudable effort of providing libraries for our rural schools will largely fail in fulfilling its purpose under the present arrangements. A large per cent of our country population ought to remain upon the farms. Then how important that we provide methods and forms of education that will, first, inculcate a love for country life and labor and, secondly, such a knowledge of vegetable and animal life as will enable him to thus utilize and control the laws of nature, so that all possible financial returns may be obtained.

In a recent number of the Popular Science Monthly, W. E. DeReimer has an exhaustive and interesting article on agricultural and horticultural education in European countries. They are far, far ahead of us in every phase of the matter. France has 3,362 experiment fields and many schools and laboratories. She has 3,600 pupil-teachers in training for teaching agriculture and horticulture. Prussia maintains three grades of schools, lower, middle and higher, and pupils are trained in the culture of forests, shrubs, vines, fruits, flowers, etc. After giving a condensed review of the above paper, the "Ohio Farmer" writes as follows: "In view of all these facts, America has little to boast of in facilities for agricultural education. We should learn a lesson from France and popularize such education; begin it in the rural public schools and provide for the training of every boy who intends to be a farmer. We shall never make the progress we should in this direction until the foundation is laid in our public schools." Prof. Conway McMillan writes in "Minnesota Plant Life": "An intelligent study of nature is one of the foundation stones of useful citizenship." Pres. C. M. Hobbs, of the Indiana Horticultural Society (which has twenty local societies like our own), in his last annual address, said: "There is no better all-round, thorough means of a full, well-rounded mental development than Nature Study affords. Every American citizen should own a home; and a

home is not worthy of the name without its trees, shrubs, vines, fruits and flowers. So horticulture appeals to every man, woman and child in a greater or less degree. I hope this society and each individual member will press this matter home upon the educational authorities, until the study of nature in the common schools of the state shall be an accomplished fact." Mr. L. B. Pierce, in an address on "The Books about Us," before a country village club for practical information, after extendedly noting the wide field about us, covered by botany, zoology, entomology and chemistry, and that all could be studied in the nearest road-side thicket or neglected fence row, said: "Now, my friends, if you have followed me thus far, you perhaps have detected a decided leaning to practical results in studying the books we have around us. I think, if we observe closely, we shall find there is not nearly so much study at the present time simply to satisfy curiosity as there was fifty years ago, because scientific research has all it can do to keep up with the practical demands of civilization. In a few weeks, we shall be pining for the odor of freshly turned soil, for the hum of insects and the song birds. Nature will open volumes on every side. Let us peruse them to the extent of our abilities."

Now, the question arises, how shall this wide scope of instruction be carried out, in an elementary way, in our common schools? Permit me first to present what you may consider an ideal method, although in many respects it is already an actuality in one or more instances; to be followed by suggestions of what can be done in the local district, until the present ideal can be attained, with a view then, doubtless, of something far better. Ohio has a law for the centralization of the schools in each township. Gustavus township, Trumbull county, of nine school districts, has been working under that law the past season. They have a central building, 55x45 feet, two stories, with all modern arrangements and fixtures. There are eight routes and eight covered vans, with blankets and robes, with room for eighteen to twenty scholars each. The routes are let to the lowest responsible bidder, who gives a bond for faithful performance of all duties specified, and good conduct assured. Average expense per day, $1.08. Cost per pupil for schooling for the year, $15.00, and many more pupils attending school than before, severally, at the nine schools. No tramping through the mud, snow and slush, and all are shielded from storms. Here we obviate the small schools of from two to twelve scholars, with short terms and full expense, have room and opportunity for good and well selected libraries, full length terms, regular school habits, as tardiness is abolished where there is free delivery, and much more time for additional studies under teachers of varied accomplishments. Good opportunities are here presented for the study of things pertaining to horticulture and agriculture, from the most elementary step upward.

Now, locate this building within a campus of from three to five acres, having, at first, a landscape gardener; lay out the space, including the playgrounds, walks, plats for gardening, flowers, nursery purposes for fruit and timber trees, shrubs, grasses and grains, vines, ornamental grasses, etc. Let this be done within view and hearing of all the teachers and scholars, with the general reasons therefor given by the gardener. Have a time each day in the curriculum, as for any other recitation, in or out-of-doors, according to the weather and circumstances, when a part or all of the scholars shall be taught why and how, and to do the work of setting, planting, culti-

vating, trimming, grafting, naming, etc., etc., the students to be marked as in other class-work. The teachers may not be capable instructors in all these lines, but without doubt within each township may be found a man or woman perfectly competent to give instruction in any line with which the teacher proper may be unfamiliar, who would be glad to render the service upon the day of said recitation, such as setting of trees, trimming, grafting, potting of plants, examining buds, insects, worms, etc. As often as possible have lectures, professional or otherwise, on some division of Nature Study; and in summer take the individual classes or the whole school into the forest for a pleasant stroll to name the trees, the plants, etc., having them tell their natural characteristics and differences, and again into the orchards, both when in blossom and in fruitage.

To illustrate the benefits of this line of teaching and practice, permit me to quote from a report of the last annual meeting of the Ohio State Horticultural Society, pertaining to a lecture given by Mr. F. H. Shuey, of Dayton. "Mr. Shuey gave a lecture on home beautifying, illustrated by stereopticon views. The firm with which Mr. Shuey is connected has some 2,000 employes, and pays large sums in wages to citizens of Dayton. One of the innovations introduced in its dealings with its employes is the setting aside of a plat of ground whereon the children may make gardens and compete for prizes. Last year thirty-three boys competed, each having a plat 10x130 feet. Some of these boys grew more than enough vegetables to supply their families." The report proceeds to show why this gardening on the part of the boys was directed by the company. It was to keep them busy and out of mischief, because the vicinity of the employes homes had become of ill-repute. The next step was to clean up about the premises and to enter into a regular system of landscape gardening, resulting in a short time in this vicinity being the most beautiful part of the whole city, the children becoming orderly and interested in the beautifying of their premises, even to the back-yards and alley-ways. Again I quote: "Small children became so expert and interested in the work, that they would criticize various attempts at ornamental planting with a good deal of judgment and acumen. In looking at the work as shown on the screen, one could not but note that some of the finest effects were with very cheap and easily obtained materials. Morning glories, honey-suckles, climbing nasturtiums and moon-vines were most used for porches and fence screens, while the beds and groups were of easily grown annuals and bedding plants. For heavy planting, the castor bean, canna and caladium were used, being often massed with a very tropical effect. The fences were universally covered with vines, often poultry netting forming the fence for the vines to climb upon. The same material was used around verandas."

How much better for child, parent and community, both for the present and for the future, for the scholars to become interested in such scientific study and practical work than even to spend the time largely in studying Latin, continually drumming upon the piano, doing fancy work, reading trashy, blood-curdling novels, gossiping about their neighbors, playing tricks of various degrees of meanness in the community, not to mention the worse than wasted time in dancing, playing cards and rehearsing vile, foul stories. All thinking, unselfish people are today, as never before, seriously pondering over the best and most practicable methods of eradicating or effectually controlling the great and destroying evils abroad in the land,

like intemperance and vice in all its forms. Whatever else may be attempted or accomplished, it is evident to me that greater and still more strenuous efforts must be put forth to keep the youth, from their earliest perceptions, busy in mind and body, by study and work upon all lines as displayed upon the varied pages of the voluminous book of nature. The active, observant, diligent and informed person, in the direction herein mentioned, will seldom become a subject to the grosser habits or evils, but the indolent, ignorant and careless person will almost assuredly become a menace to the family, community and the state.

During the time elapsing before the above specified centralizing system of our rural schools shall be adopted by us, which I verily believe and hope will soon be accomplished, what steps shall be taken to partially carry forward the suggestions already offered. Let the school board, parents and teachers counsel together and utilize the existing small plats at present surrounding the school houses to the greatest extent possible, with flowers, ornamental grasses, the smaller varieties of foliage plants, shrubs and running vines, as the limited space will not permit the culture of fruit and forest trees, grass and grain plats, small-fruits, gardening and the larger shrubs, plants and vines. If the teacher has not taken a course in biology in the high school or elsewhere, and has not received a practical knowledge of gardening and fruit and forest tree planting and culture on the farm, she and the older scholars may read and study botany, Prof. Green's "Amateur Fruit Growing," "Vegetable Gardening," and "Forestry in Minnesota," Prof. Bailey's "Nursery Book," and Prof. McMillan's "Plant Life in Minnesota," imparting to the younger ones orally as they progress with their studies; also, reading singly and collectively the writings of John Burroughs, John Muir, Thoreau and Horace Bushnell. Frequently all together take practical lessons in the yard, neighboring gardens, fields and forests, not in the manner of bad boys, without liberty, to destroy and steal, but by arrangement with the owner, for information and enjoyment, requesting the owner to give them actual illustrations of skilled work in the yard, garden, orchard and shelter-belts. John Burroughs says, "Nature we have always with us, an inexhaustible storehouse of that which moves the heart, appeals to the mind and fires the imagination. To the scientist, nature is a storehouse of facts, laws, processes; to the artist a storehouse of pictures; to the poet, a storehouse of images; to the moralist, a storehouse of precepts and parables; to all she may be a source of knowledge and joy."

I have been informed that by planting a few castor beans here and there in the garden the cutworms will be destroyed. A lady friend planted a few of these on the south side of her pansy bed as a protection from the sun, and she found that she had accomplished more than she had intended, for in the morning when she went to look at her flowers she found numbers of cutworms dead on the top of the ground. It is thought that the worms eat the roots of the castor bean and find them fatal.

Transplanting Beans.—We have been successful in planting lima beans in pans and boxes and transplanting them to the open ground. They need to be planted as early as possible in order to ripen before early fall frosts.

A Desirable Flower.—One of the best entirely hardy plants we have is the new rudbeckia, Golden Glow.

Secretary's Corner.

SUCCESS.—"We have been very successful in our horticultural and forestry work this year."—T. A. Hoverstad, Supt. Agricultural Experiment Station, Crookston, Minn.

YOU ARE COMING TO THE STATE FAIR?—And don't forget to bring or send something to help along the show and increase your interest in it. State Fair week is Sept. 3 to 8 inclusive.

REPORT FOR '75 WANTED.—We have a call from one of the members for a report of our society for 1875. If any one has a copy that he can spare, kindly notify the secretary.

A GOOD REPORT.—"Will have 500 bushels of Wealthy, and they are the largest I ever saw them at this time of the year. I set 450 apple trees this year and do not think I lost a dozen. Very old trees have made a big growth although bearing a big crop." J. A. HOWARD, Hammond. Aug. 7, 1900."

A DESIRABLE TOMATO.—Mr. T. T. Bacheller brought into this office a basket of Fordhook's First tomato, which for rich color, uniformity of medium size and absolute smoothness of exterior are worthy of special mention. In use they proved equally worthy, being rich, sweet, meaty and free from an excess of seeds. Have you tried the variety?

HOW TO KNOW AND FIND MUSHROOMS.—The mushroom exhibitors at the state fair are preparing a little folder for free distribution, giving plain descriptions of several of the more common mushrooms, hints as to where they are most likely to to be found and directions for cooking them. Visit this exhibit, which will be found in our building, and get a copy.

OUR ABSENT ONES.—Prof. S. B. Green, who has been spending the summer in Europe, is expected home September 6th, so the writer is informed, and will probably be at his post again at the State Agricultural School soon after this number comes to hand. Pres. W. W. Pendergast has gone to the Pacific coast for three months. We shall hear from him there.

THE CHENEY PLUM.—A number of specimens of Cheney plums have been brought in lately, some for exhibition and others for identification. A basket of very fine specimens left by Mr. T. G. Gearty deserve special notice. Of all the varieties the writer has seen this season none surpass in appearance this one, and the trees are bearing full. It is said to be especially valuable for "putting up."

ARE YOU AN EXHIBITOR AT THE STATE FAIR?—If not and you are growing fruit you should be, if only to the extent of one plate of apples or plums. Don't forget that the management have promised to have everything in place

when the fair opens Monday morning and plan accordingly. To bring in fruit to set up Monday morning will be too late to secure recognition from the judges. Grapes may come in Monday afternoon, but all other fruits must be in place at 8 a. m. of that day. Minnesota horticulturists are on time and will be on this occasion.

WILD GRAPES WITH LARGE FRUIT.—In a letter from Prof. N. E. Hansen, Professor of Horticulture at the South Dakota Experiment Station, extracts from which are printed elsewhere in this issue, he expresses a desire to "hear of any wild grapes with specially large fruit." The professor will be glad to hear from any one on this subject. There is undoubtedly an opportunity to improve the native grape by selection, hybridizing, etc., and the purpose of the professor to get a desirable grape hardy during a dry, snowless South Dakota winter, merits the assistance of any one interested in the development of northwestern horticulture.

A HEADQUARTERS SOCIETY TENT AT THE STATE FAIR.—Arrangements have been made to pitch a large tent opposite and close to the west entrance of Horticultural Hall at the State Fair grounds. The tent is to be furnished with tables and chairs, and some one will be in attendance to look after visitors. Members of the society in attendance at the fair are urged to call and register and make themselves at home. It is intended to make this a place of rest for members and their families and friends and to furnish an opportunity for enlarging acquaintance and social conference. Be sure and visit the society tent and enjoy with us its comforts.

THE AMERICAN FORESTRY ASSOCIATION.—This organization has lately issued an appeal setting forth its urgent need of an increasing membership, "especially in the middle western region, where it now has hardly any representation." Organized in 1882, and with a membership including every state in the Union, it is doing a useful work and has been found an important factor in the efforts now making to care for the forests of our country. Its objects are well set forth as follows, in a circular they send out:

"A business-like and conservative treatment of the forest resources of this continent.

"The advancement of educational, legislative and other measures tending toward this end.

"The diffusion of knowledge regarding the conservation, management and renewal of forests, the proper utilization of their products, methods of reforestation of waste lands, the planting of trees for ornament, and cognate subjects of arboriculture."

The annual dues of this association are $2.00, and $50.00 constitutes a life membership. Besides the regular annual and special meetings it also issues a monthly publication, THE FORESTER, which, as the official organ of the association, is sent free to every member, and occasionally reports and papers, giving results of investigations bearing more or less directly on forests and their utilization, are sent out. Should the reader's interest in this special field of work be broader than the confines of his own state an alliance with this organization is earnestly commended to him, and in aiding its unselfish purpose to foster this important public work and in sharing in its certain triumphs he will be fully rewarded. Its president is Hon. Jas. Wilson, the Secretary of Agriculture. Remittances may be addressed to the Second Assistant Secretary Henry James, 202 14th St. S. W., Washington, D. C.

A CORNER OF HORTICULTURAL HALL, MINNESOTA STATE FAIR, 1900.

THE MINNESOTA HORTICULTURIST.

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HORTICULTURE AT THE MINNESOTA STATE FAIR IN 1900.

A. W. LATHAM, SECRETARY.

At eleven o'clock, on the night of Saturday, Sept. 8, 1900, the forty-first annual fair of the Minnesota State Agricultural Society came to a close, literally in a blaze of glory, the last number of the program from the grand stand being a magnificent show of fire works, and all the buildings being brilliantly illuminated. The fair was well appreciated by the public, the number of patrons showing a considerable excess over the year before. The attendance was well distributed through the week, there being only on one day anything like a crush.

As far as other parts of the ground are concerned, the writer is not prepared to make comparisons, but in the horticultural building, concerning which this article is written, there was a notable increase over the previous year, and increasingly so over other years. The fruit growing interests of our state may well be satisfied with the show made this year, the entries for fruit being much in excess of any previous fair, and the increase in the number of exhibitors and the plates of fruit shown keeping pace therewith.

The exact number of entries of fruit is not this moment available, but the number of plates in the single plate list, each of which should represent an entry, amounted to 776, with the number of entries for collections seventy-five, amounting in all to 851. This is approximately the correct number of entries in the fruit department. Below is given somewhat in detail the facts summarized. The footings show that there were exhibited in this hall for competitive purpose a total of 3,741 plates, which includes something like seventy-five to a hundred jars of plums in glass, a number not only very much in excess in total, but also in detail, of the figures of the preceding year. The largest increase was in the plum exhibit, where 901 plates were shown this year, as against 258 last year. The new sweepstakes premium of $50 had much to do with this increase, but it was made possible also by the unusually large crop of plums this year.

APPLES.

Sweepstakes, 6 entries	729 plates
Collections, professional, 4 entries	336 plates
Collections, amateur, 12 entries	417 plates
Seedlings, 5 entries	378 plates
Single plates, 410 entries	410 plates
Collections of 10 varieties, 15 entries	150 plates
Crabs or hybrids, 146 entries	146 plates
	2,566 plates

PLUMS.

Sweepstakes, 10 entries	679 plates
Collections in glass, 4 entries	60 plates
Collections not in glass, 4 entries	42 plates
Single plates, 120 entries	120 plates
	901 plates

GRAPES.

Collections, 5 entries	174 plates
Single plates, 91 entries	91 plates
	265 plates

PEACHES.

4 entries	4 plates

PEARS.

5 entries	5 plates

These figures do not include what would easily amount to another thousand plates exhibited on the society booth and in the two nursery exhibits in the hall, making a grand total of approximately 5,000 plates of fruit.

The Minneapolis Micological Society maintained a very creditable exhibit of mushrooms through the fair, and well earned the $30 appropriated for this purpose by the state fair board. One or more members of the club was always at hand to answer the questions of the curious crowds that thronged around this exhibit. The distribution of a little folder, prepared by Mr. W. M. Babcock, describing common varieties of mushrooms, where to find them, etc., added very much to its practical value.

Something like a hundred plates of seedling apples from the seedling orchard of the late Mr. Gideon were on exhibition. They made a handsome showing indeed, as most of them were of high color.

Of the exhibitors in the hall, Mr. J. S. Harris, of La Crescent, as usual easily took the first place, having 240 plates in his sweepstakes apple exhibit and 113 in his collection of apples, all of the latter grown upon his own place, to say nothing of a large number of single plates of which no account can be made at this time. Other of the larger exhibitors, something the order named, are Wm. Somerville, of Viola; W. L. Parker, Farmington; J. A. Howard, Hammond; Clarence Wedge, Albert Lea; J. R. Cummins, Eden Prairie; Ditus Day, Farmington; W. S. Widmoyer, Dresbach; and a long list of others altogether too many to name. The list of awards, found elsewhere in this number, will give a very fair idea of the comparative merits of the various exhibits.

Prof. N. E. Hansen came from the Experiment Station at Brookings, S. D., to judge the apples. In the amateur department he was assisted by W. L. Parker and others. Wyman Elliot judged the plums, and had a good job on his hands. With investigations that he made that will bear fruit of value to the plum growing interests of the state later, this consumed a large portion of the week. Dewain Cook, of Windom, had the largest sweepstake exhibit of plums, numbering some 87 varieties. He was also well represented in the other branches of the plum exhibit. Mr. Lord's collection of 80 varieties brought him a close second. These two exhibitors together could easily fit out a whole fair of plums by themselves. They had, however,

a good deal of assistance, J. R. Cummins, O. F. Brand, W. L. Parker, August Wittman and many others taking a hand, resulting in a grand total of the unprecedented number of 901 plates.

As to grapes, this was an off year, and not much was expected in this department, and the fruit that was shown was hardly up to the usual high standard. There was an increase of five plates, however, over the total of last year. As to peaches and pears, we got there, as usual, with nine entries, These entries are of fruit actually shown, and do not include a number where the exhibitors failed to appear.

The two nursery exhibits of last year were continued. C. W. Sampson occupied the sixteen feet in the southwest corner of the hall with a very tasty display, and the Jewell Nursery Company had as before the space between the doors at the north end. The changes in the last named exhibit were such as to make it the attractive feature of the hall, and it deserves especial mention. The florists, all from the city of Minneapolis, occupied the rest of the wall space, excepting a space granted to so-called concessions, where the people could buy "solid" jewelry and similar goods. It is the ambition of this department to eliminate this class of "exhibits" entirely from the hall, and as the management of the fair seem to feel that way too, it is likely that we have this year seen the last of them. With the aid of the horticultural society, always readily granted, there is no doubt that the entire building can be occupied with a purely horticultural exhibit and made a very handsome place, without this incongruous element.

The comments of the press upon the horticultural department were more than usually liberal, and as our readers have all undoubtedly noticed them they need not be referred to here any more than to say that they voice very accurately the growing interest in the industries this department especially fosters. An editorial of more than two columns found in the Pioneer Press the Sunday following the fair gives a very fair resume of the present condition of fruit growing in our state, and the relation of the horticultural society and the state fair thereto. If you are interested to know what others think of us, it may not be too late to secure a copy.

As to the future of our department, it may only be conjectured. It may be retained in the building it at present occupies, or we may be so fortunate as to secure the erection of a new building the coming year. We would look better in a new suit of clothes and feel more comfortable. It would gratify our aspirations and cause us to put forth greater efforts to maintain the high standing of our society. It has been suggested that, as there must be soon a new building for either horticulture or agriculture, that a double building be erected which would accommodate both, with a rotunda between constructed especially for flowers and plants, and a long wing on either side, one for our brethren in the agricultural department and the other for ourselves. Agriculture is very illy accommodated under the grand stand, and the manufactures and liberal arts department would find plenty of use for our present building. Such a structure as this outlined would be a grand addition to the present fine equipment of the state fair and worthy of the two interests it would accommodate. The garden, orchard and farm should touch elbows at the fair as they do at home. What do you think of this project, and what will you do to advance it?

The regulation now enforced requiring all the exhibits to be in place when the fair opens Monday morning has caused a little disappointment to

a few of the exhibitors, who seem not fully to have understood it. A number of shipments of fruit came in Monday or Tuesday after the fair opened and could not be set up or entered, partly for lack of room, and partly as being contrary to the regulations. At eight o'clock on Monday morning, when the fair was formally opened every inch of space in our hall was occupied, except that reserved for grapes and cut flowers, which are put on Tuesday morning, and every plate of fruit and every plant was in place and remained so until the fair closed at 11 o'clock Saturday night. Promptness in our building, as well as a beautiful and complete show, has considerable to do with the credit this department is receiving, and we look confidently to our membership to assist in maintaining and still further advancing this high reputation.

PREMIUMS AWARDED AT MINNESOTA STATE FAIR IN 1900.

(Under the auspices of the Minnesota State Horticultural Society.)

Premiums awarded, total $1,008.50

J. M. Underwood, Supt.
A. W. Latham, Assistant Supt.
N. E. Hansen, Judge of Apples.
W. L. Parker, Judge of Apples.
R. S. Mackintosh, Judge of Grapes.
Wyman Elliot, Judge of Plums.
Gust. Malmquist, Judge of Flowers.

APPLES.

(Open to all.)

	1st Prem.	2d Prem.	3d Prem.
Sweepstakes collection. Open to all competitors and subject to all the foregoing rules, with the following modifications: First, the fruit need not have been grown by the exhibitor; second, the collection may include any variety, seedling or otherwise, grown in Minnesota; third, each plate shown must be plainly labeled with the name and address of its grower.			
J. S. Harris, La Crescent	$25.00		
W. L. Parker, Farmington		$15.00	
John R. Cummins, Washburn			$10.00

John W. Thomas & Co., Minneapolis, offered $100.00 as a special sweepstakes premium, to be pro rated according to merit among all competitors in the above competition: J. S. Harris, La Crescent, $35; W. L. Parker, Farmington, $22.00; John R. Cummins, Washburn, $15; J. A. Howard, Hammond, $12.00; Wm. Somerville, Viola, $11.00; F. J. Butterfield, Long Lake, $5.00.

	1st Prem.	2d Prem.	3d Prem.
Peck of Wealthy Apples—			
A. D. Leach, Excelsior	$5.00		
L. D. Hause, Mendota		$3.00	
P. H. Perry, Excelsior			$2.00

Collection of ten varieties of apples, to be judged with special reference to the size, beauty and perfection of the fruit (crabs and nybrids excepted), $25.00. To be divided pro-rata among all the exhibitors in this lot: Wm. Somerville, Viola, $3.30; W. S. Widmoyer, Dresbach, $3.15; J. S. Harris, La Crescent, $2.50; C. W. Sampson, Eureka, $2.50; J. A. Howard, Hammond, $2.50; Ditus Day, Mapleton, $2.30; W. L. Parker, Farmington, $2.15; F. J. Peterson, Waconia, $1.80; Chas. Luedloff, Cologne, $1.80.

(For Professionals.)

	1st Prem.	2d Prem.	3d Prem.	4th Prem.
Collection (hybrids and crabs excepted)—				
J. S. Harris, La Crescent	$25.00			
Wm Somerville, Viola		$20.00		
Clarence Wedge, Albert Lea			$15.00	
W. L. Parker, Farmington				$10.00

	1st Prem.	2d Prem.	3d Prem.
Collection of hybrids and crabs—			
W. L. Parker, Farmington	$5.00		
J. S. Harris, La Crescent		$4.00	
Wm. Somerville, Viola			$3.00

Single Plates.

	1st Prem.	2d Prem.	3d Prem.
Antinovka—			
Clarence Wedge, Albert Lea	$1.00		
J. S. Harris, La Crescent		$.75	
W. L. Parker, Farmington			$.50
Anisim—			
J. S. Harris, La Crescent	1.00		
Wm. Somerville, Viola		.75	
W. L. Parker, Farmington			.50
Long Arcade—			
Clarence Wedge, Albert Lea	1.00		
J. S. Harris, La Crescent		.75	
Blushed Caville—J. S. Harris, La Crescent	1.00		
Brett—			
Wm. Somerville, Viola	1.00		
W. L. Parker, Farmington		.75	
Ben Davis—			
Clarence Wedge, Albert Lea	1.00		
W. L. Parker, Farmington		.75	
Wm. Somerville, Viola			.50
Charlamoff, Peterson's—			
W. L. Parker, Farmington	1.00		
J. S. Harris, La Crescent		.75	
Clarence Wedge, Albert Lea			.50
Cross—			
W. L. Parker, Farmington	1.00		
Clarence Wedge, Albert Lea		.75	
Wm. Somerville, Viola			.50
Fameuse—			
W. L. Parker, Farmington	1.00		
J. S. Harris, La Crescent		.75	
O. M. Lord, Minnesota City			.50
Gilbert—Wm. Somerville, Viola	1.00		
Grundy—Wm. Somerville, Viola	1.00		
Harding—Wm. Somerville, Viola	1.00		
Humboldt—Wm. Somerville, Viola	1.00		
Haas—			
W .L. Parker, Farmington	1.00		
C. W. Sampson, Eureka		.75	
Brand & Sons, Faribault			.50
Judson—Wm. Somerville, Viola	1.00		
Kaump—			
Clarence Wedge, Albert Lea	1.00		
Longfield—			
Gust Johnson, Excelsior	1.00		
W. L. Parker, Farmington		.75	
Thos. Redpath, Long Lake			.50
Lubsk Queen—			
Wm. Somerville, Viola	1.00		
Lowland Raspberry—			
Clarence Wedge, Albert Lea	1.00		
Wm. Somerville, Viola		.75	
J. S. Harris, La Crescent			.50
Maple—			
Wm. Somerville, Viola	1.00		
McMahon White—			
J. S. Harris, La Crescent	1.00		
Brand & Sons, Faribault		.75	
W. L. Parker, Farmington			.50
Malinda—			
W. L. Parker, Farmington	1.00		
Thos. Redpath, Long Lake		.75	
Clarence Wedge, Albert Lea			.50
Northwestern Greening—			
Brand & Sons, Faribault	1.00		
J. S. Harris, La Crescent		.75	
O. M. Lord, Minnesota City			.50
Okabena—			
W. L. Parker, Farmington	1.00		
Wm. Somerville, Viola		.75	
Ostrekoff (true)—			
Clarence Wedge, Albert Lea	1.00		
J. S. Harris, La Crescent		.75	
Patten's Greening—			
C. W. Sampson, Eureka	1.00		
W. L. Parker, Farmington		.75	
Wm. Somerville, Viola			.50
Peerless—			
W. L. Parker, Farmington	1.00		
Thos. Redpath, Long Lake		.75	
Brand & Sons, Faribault			.50
Phebe—			
Wm. Somerville, Viola	1.00		
Clarence Wedge, Albert Lea		.75	

	1st Prem.	2d Prem.	3d Prem.
Peter—			
W. L. Parker, Farmington	1.00		
C. Wedge, Albert Lea		.75	
A. Gideon, Excelsior			.50
Repka Malenka—			
O. M. Lord, Minnesota City	1.00		
C. Wedge, Albert Lea		.75	
Wm. Somerville, Viola			.50
Rollin's Prolific—			
J. S. Harris, La Crescent	1.00		
Wm. Somerville, Viola		.75	
Sandy Glass—			
C. W. Sampson, Eureka	1.00		
Wm. Somerville, Viola		.75	
Talman Sweet—			
Brand & Son, Faribault	1.00		
C. Wedge, Albert Lea		.75	
W. L. Parker, Farmington			.50
Tetofsky—			
J. S. Harris, La Crescent	1.00		
W. L. Parker, Farmington		.75	
C. Wedge, Albert Lea			.50
Utter—			
J. S. Harris, La Crescent	1.00		
Walbridge—			
J. S. Harris, La Crescent	1.00		
W. L. Parker, Farmington		.75	
O. M. Lord, Minnesota City			.50
Wolf River—Wm. Somerville, Viola	1.00		
White Pigeon—Wm. Somerville, Viola	1.00		
Yellow Sweet—			
C. Wedge, Albert Lea	1.00		
Wm. Somerville, Viola		.75	
Yellow Transparent—			
Wm. Somerville, Viola	1.00		
Clarence Wedge, Albert Lea		.75	
C. W. Sampson, Eureka			.50

	1st Prem.	2d Prem.	3d Prem.	4th Prem.	5th Prem.	6th Prem.
Duchess of Oldenberg—						
C. W. Sampson, Eureka	$1.75					
Wm. Somerville, Viola		$1.50				
J. S. Harris, La Crescent			$1.25			
Thos. Redpath, Long Lake				$1.00		
W. L. Parker, Farmington					$.75	
C. Wedge, Albert Lea						$.50
Hibernal—						
C. Wedge, Albert Lea	1.75					
C. W. Sampson, Eureka		1.50				
L. D. Hause, Mendota			1.25			
O. M. Lord, Minnesota City				1.00		
Thos. Redpath, Long Lake					.75	
Gust Johnson, Excelsior						.50

	1st Prem.	2d Prem.	3d Prem.
Okabena—			
W. L. Parker, Farmington	$1.75		
Thos. Redpath, Long Lake		$1.50	
J. S. Harris, La Crescent			$1.25

	1st Prem.	2d Prem.	3d Prem.	4th Prem.	5th Prem.
Patten's Greening—					
C. W. Sampson, Eureka	$1.75				
W. L. Parker, Farmington		$1.50			
Wm. Somerville, Viola			$1.25		
J. S. Harris, La Crescent				1.00	
C. Wedge, Albert Lea					$.75

	1st Prem.	2d Prem.	3d Prem.	4th Prem.	5th Prem.	6th Prem.
Wealthy—						
Gust Johnson, Excelsior	$1.75					
C. Wedge, Albert Lea		$1.50				
C. W. Sampson, Eureka			$1.25			
A. Gideon, Excelsior				$1.00		
J. S. Harris, La Crescent					$.75	
Brand & Sons, Faribault						$.50

(For Amateurs.)

	1st Prem.	2d Prem.	3d Prem.	4th Prem.	5th Prem.
Collection (hybrids and crabs excepted—					
J. F. Peterson, Waconia	$15.00				
W. S. Widmoyer, Dresbach		$10.00			
Ditus Day, Mapleton			$8.00		
J. A. Howard, Hammond				$4.00	
Chas. Leudloff, Cologne					$2.00

	1st Prem.	2d Prem.	3d Prem.	4th Prem.	5th Prem.
Collection of hybrids and crabs—					
H. H. Heins, Lydia	5.00				
H. H. Pond, Bloomington		4.00			
Mrs. D. G. Gordon, Long Lake			3.00		
Carl Struck, Excelsior				2.00	
Ditus Day, Mapleton					1.00

Single Plates.

	1st Prem.	2d Prem.	3d Prem.
Antinovka—			
P. H. Perry, Excelsior	$1.00		
H. H. Heins, Lydia		$.75	
H. P. Eberhard, Mound Prairie			$.50
Anisim—			
H. F. Busse, Minneapolis	1.00		
H. M. Lyman, Excelsior		.75	
H. H. Heins, Lydia			.50
Blushed Calville—			
J. A. Howard, Hammond	1.00		
F. J. Peterson, Waconia		.75	
Brett—J. A. Howard, Hammond	1.00		
Ben Davis—			
W. S. Widmoyer, Dresbach	1.00		
Wm. Oxford, Freeburg		.75	
J. A. Howard, Hammond			.50
Charlamoff, Peterson's—			
J. Kline, Hokah	1.00		
H .H. Heins, Lydia		.75	
T. Talbert, Long Lake			.50
Christmas—F. J. Peterson, Waconia	1.00		
Cross—			
Dewain Cook, Windom	1.00		
Chas. Leudloff, Cologne		.75	
F. J. Peterson, Waconia			.50
Fameuse—			
W. S. Widmoyer, Dresbach	1.00		
D. F. Akin, Farmington		.75	
H. P. Eberhard, Mound Prairie			.50
Gilbert—J. A. Howard, Hammond	1.00		
Grundy—D. Cook, Windom	1.00		
Harding—D. Cook, Windom	1.00		
Haas—			
A. D. Leach, Excelsior	1.00		
H. H. Heins, Lydia		.75	
Ditus Day, Farmington			.50
Kaump—			
H. M. Lyman, Excelsior	1.00		
Chas. Leudloff, Cologne		.75	
Longfield—			
P. H. Perry, Excelsior	1.00		
H. H. Heins, Lydia		.75	
H. M. Lyman, Excelsior			.50
Lubsk Queen—H. M. Lyman, Excelsior	1.00		
Lowland Raspberry—			
Ditus Day, Mapleton	1.00		
H. M. Lyman, Excelsior		.75	
McMahon White—			
W. S. Widmoyer, Dresbach	1.00		
J. A. Howard, Hammond		.75	
H. P. Eberhard, Long Prairie			.50
Malinda—			
Mrs. D. G. Gordon, Long Lake	1.00		
D. Cook, Windom		.75	
T. Talbert, Long Lake			.50
Northwestern Greening—			
H. P. Eberhard, Mound Prairie	1.00		
Wm. Oxford, Freeburg		.75	
J. F. Wilcox, Excelsior			.50
Okabena—			
D. Cook, Windom	1.00		
D. F. Akin, Farmington		.75	
H. P. Eberhard, Mound Prairie			.50
Ostrekoff (true)—Wm. Oxford, Freeburg	1.00		
Patten's Greening—			
A. D. Leach, Excelsior	1.00		
Wm. Oxford, Freeburg		.75	
Chas. Leudloff, Cologne			.50
Peach—			
Ditus Day, Mapleton	1.00		
J. A. Howard, Hammond		.75	
Peerless—			
A. D. Leach, Excelsior	1.00		

	1st Prem.	2d Prem.	3d Prem.
D. Perfect, Faribault		.75	
H. Guerdsen, Victoria			.50
Peter—			
P. H. Perry, Excelsior	1.00		
T. Talbert, Long Lake		.75	
J. F. Wilcox, Excelsior			.50
Repka Melenka—			
H. H. Pond, Bloomington	1.00		
Rollin's Prolific—			
W. S. Widmoyer, Dresbach	1.00		
J. A. Howard, Hammond		.75	
Talman Sweet—			
Wm. Oxford, Freeburg	1.00		
Ditus Day, Mapleton		.75	
Tetofsky—			
H. H. Pond, Bloomington	1.00		
H. P. Eberhard, Mound Prairie		.75	
Ditus Day, Mapleton			.50
Utter—			
W. S. Widmoyer, Dresbach	1.00		
Chas. Leudloff, Cologne		.75	
H. P. Eberhard, Mound Prairie			.50
Waldbridge—			
Wm. Oxford, Freeburg	1.00		
J. A. Howard, Hammond		.75	
Wolf River—			
W. S. Widmoyer, Dresbach	1.00		
Wm. Oxford, Freeburg		.75	
J. A. Howard, Hammond			.50
White Pigeon—			
F. J. Peterson, Waconia	1.00		
Yellow Sweet—			
J. R. Cummins, Washburn	1.00		
Yellow Transparent—			
J. A. Howard, Hammond	1.00		
Thos. Talbert, Long Lake		.75	
H. P. Eberhard, Mound Prairie			.50

	1st Prem.	2d Prem.	3d Prem.	4th Prem.	5th Prem.	6th Prem.
Duchess of Oldenberg—						
J. A. Howard, Hammond	$1.75					
F. J. Butterfield, Long Lake		$1.50				
A. D. Leach, Excelsior			$1.25			
D. Cook, Windom				$1.00		
H. H. Heins, Lydia					.75	
T. Talbert, Long Lake						.50
Hibernal—						
A. D. Leach, Excelsior	1.75					
Chas. Hause, Mendota		1.50				
H. Guerdsen, Victoria			1.25			
T. Talbert, Long Lake				1.00		
F. J. Peterson, Waconia					.75	
D. Cook, Windom						.50
Okabena—						
J. A. Howard, Hammond	1.75					
H. H. Heins, Lydia		1.50				
H. H. Pond, Bloomington			1.25			
J. Klein, Hokah				1.00		
H. M. Lyman, Excelsior					.75	
H. F. Bussee, Minneapolis						.50
Patten's Greening—						
Lillian Spates, Markville	1.75					
H. M. Lyman, Excelsior		1.50				
F. J. Peterson, Waconia			1.25			
Mrs. D. G. Gordon, Long Lake				1.00		
Ditus Day, Mapleton					.75	
Wm. Oxford, Freeburg						.50
Wealthy—						
P. H. Perry, Excelsior	1.75					
A. D. Leach, Excelsior		1.50				
J. A. Howard, Hammond			1.25			
E. W. Robinson, Money Creek				1.00		
W. S. Widmoyer, Dresbach					.75	
H. H. Heins, Lydia						.50

CRABS AND HYBRIDS.

(Open to all.)

	1st	2d	3d
Briar Sweet—			
F. J. Butterfield, Long Lake	$1.00		
Mrs. D. G. Gordon, Long Lake		$.75	
W. L. Parker, Farmington			$.50

	1st Prem.	2d Prem.	3d Prem.
Dartt—			
W. L. Parker, Farmington	1.00		
J. S. Harris, La Crescent		.75	
D. W. Robinson, Money Creek			.50
Early Strawberry—			
F. J. Butterfield, Long Lake	1.00		
W. L. Parker, Farmington		.75	
J. A. Howard, Hammond			.50
Florence—			
P. H. Perry, Excelsior	1.00		
T. Redpath, Long Lake		.75	
Mrs. D. G. Gordon, Long Lake			.50
Gideon No. 6—			
J. A. Howard, Hammond	1.00		
Wm. Somerville, Viola		.75	
C. W. Sampson, Eureka			.50
Greenwood—			
F. J. Peterson, Waconia	1.00		
W. L. Parker, Farmington		.75	
H. M. Lyman, Excelsior			.50
Hyslop—			
Aug. Geisman, St. Paul	1.00		
F. H. Gibbs, St. Anthony Park		.75	
W. L. Parker, Farmington			.50
Lyman's Prolific—			
A. D. Leach, Excelsior	1.00		
J. R. Cummins, Washburn		.75	
H. M. Lyman, Excelsior			.50
Martha—			
C. W. Sampson, Eureka	1.00		
W. L. Parker, Farmington		.75	
P. H. Perry, Excelsior			50
Pride of Minneapolis—			
F. H. Gibbs, St. Anthony Park	1.00		
D. Redpath, Long Lake		.75	
Lillian Spates, Markville			.50
Sweet Russett—			
D. Cook, Windom	1.00		
W. S. Widmoyer, Dresbach		.75	
Ditus Day, Mapleton			.50
Tonka—			
Lillian Spates, Marksville	1.00		
Chas. Hause, Mendota		.75	
T. Redpath, Long Lake			.50
Transcendent—			
Carl Struck, Excelsior	1.00		
C. W. Sampson, Eureka		.75	
Isabella Barton, Excelsior			.50
Virginia—			
F. J. Butterfield, Long Lake	1.00		
T. Redpath, Long Lake		.75	
Mrs. D. G. Gordon, Long Lake			.50
Whitney—			
Isabella Barton, Excelsior	1.00		
J. A. Howard, Hammond		.75	
A. D. Leach, Excelsior			.50

SEEDLING APPLES.

	1st Prem.	2d Prem.	3d Prem.
Collection, excluding crabs and hybrids—			
A. Gideon, Excelsior	8.00		
D. F. Akin, Farmington		6.00	
H. M. Lyman, Excelsior			4.00
Collection of crabs and hybrids—			
A. Gideon, Excelsior	6.00		
Ditus Day, Mapleton		4.00	
H. M. Lyman, Excelsior			2.00
Fall variety, not sweet, never having received a premium at the Minnesota State Fair—			
J. S. Harris, La Crescent	6.00		
Thos. Redpath, Long Lake		4.00	
Brand & Sons, Faribault			2.00
Winter variety, not sweet, never having received a premium at the Minnesota State Fair:			
D. F. Akin, Farmington	10.00		
H. M. Lyman, Excelsior		8.00	
T. Redpath, Long Lake			2.00
Sweet variety, never having received a premium at the Minnesota State Fair—			
O. M. Lord, Minnesota City	6.00		
H. Guerdsen, Victoria		4.00	
Ditus Day, Mapleton			2.00

GRAPES.

(Open to all.)

Collection—	1st Prem.	2d Prem.	3d Prem.	4th Prem.	5th Prem.
G. Johnson, Excelsior	$20.00				
C. W. Sampson, Eureka		$15.00			
Isabella Barton, Excelsior			$10.00		
R. Knapheide, St. Paul				$8.00	
Carl Struck, Excelsior					$5.00

Agawam (Rogers No. 15)—	1st Prem.	2d Prem.	3d Prem.
G. Johnson, Excelsior	$1.50		
Carl Struck, Excelsior		$1.00	
C. W. Sampson, Eureka			$.50
Aminia, Rogers No. 39—			
C. W. Sampson, Eureka	1.50		
Carl Struck, Excelsior		1.00	
Barry, Rogers No. 43—Gust Johnson, Excelsior	1.50		
Brighton—			
Gust Johnson, Excelsior	1.50		
C. W. Sampson, Eureka		1.00	
Carl Struck, Excelsior			.50
Concord—			
Gust. Johnson, Excelsior	1.50		
C. W. Sampson, Eureka		1.00	
Aug. Geismann, St. Paul			.50
Cottage—			
Gust Johnson, Excelsior	1.50		
C. W. Sampson, Eureka		1.00	
Delaware—			
Aug. Geisman, St. Paul	1.50		
C. W. Sampson, Eureka		1.00	
Gust. Johnson, Excelsior			.50
Duchess—			
Gust Johnson, Excelsior	1.50		
C. W. Sampson, Eureka		1.00	
Eldorado—Isabella Barton, Excelsior	1.50		
Empire State—			
W. S. Widmoyer, Dresbach	1.50		
Gust. Johnson, Excelsior		1.00	
Isabella Barton, Excelsior			.50
Green Mountain—			
Carl Struck, Excelsior	1.50		
Herbert, Rogers No. 44—			
C. W. Sampson, Eureka	1.50		
Carl Struck, Excelsior		1.00	
Iona—			
C. W. Sampson, Eureka	1.50		
Gust. Johnson, Excelsior		1.00	
Carl Struck, Excelsior			.50
Janesville—			
R. Knapheide, St. Paul	1.50		
Aug. Wittman, St. Paul		1.00	
Lindley, Rogers No. 9—			
C. W. Sampson, Eureka	1.50		
R. Knapheide, St. Paul		1.00	
Gust. Johnson, Excelsior			.50
Lady—			
Aug. Wittman, St. Paul	1.50		
Gust. Johnson, Excelsior		1.00	
Carl Struck, Excelsior			.50
Martha—			
Carl Struck, Excelsior	1.50		
R. Knapheide, St. Paul		1.00	
Massasoit, Roger's No. 3—			
R. Knapheide, St. Paul	1.50		
Aug. Wittman, St. Paul		1.00	
C. W. Sampson, Eureka			.50
Moore's Diamond—			
C. W. Sampson, Eureka			.50
Moore's Early—			
Gust Johnson, Excelsior	1.50		
Isabella Barton, Excelsior		1.00	
C. W. Sampson, Eureka			.50
Niagara—			
Isabella Barton, Excelsior	1.50		
Gust. Johnson, Excelsior		1.00	
C. W. Sampson, Eureka			.50
Pocklington—			
Isabella Barton, Excelsior	1.50		
Gust. Johnson, Excelsior		1.00	
C. W. Sampson, Eureka			.50

	1st Prem.	2d Prem.	3d Prem.
Telegraph—			
C. W. Sampson, Eureka	1.50		
Gust. Johnson, Excelsior		1.00	
Carl Struck, Excelsior			.50
Wilder, Roger's No. 4—			
Gust. Johnson, Excelsior	1.50		
C. W. Sampson, Eureka		1.00	
Woodruff Red—			
Gust. Johnson, Excelsior	1.50		
Isabella Barton, Excelsior		1.00	
Worden—			
Gust. Johnson, Excelsior	1.50		
R. Knapheide, St. Paul		1.00	
Aug. Wittman, St. Paul			.50
Wyoming Red—			
C. W. Sampson, Eureka	1.50		

PLUMS.

Sweepstakes Collection—Dewain Cook, Windom, $12.00; O. M. Lord, Minnesota City, $10.90; W. L. Parker, Farmington, $5.60; Martin Penning, Sleepy Eye, $5.40; W. H. Brimhall, Hamline, $4.00; J. R. Cummins, Washburn, $3.40; Brand & Sons, Faribault, $3; H. F. Busse, Minneapolis, $2.70; J. G. Bass, Hamline, $1.50; Lillian Spates, Markville, $1.50.

	1st Prem.	2d Prem.	3d Prem.
Collection, in uniform one-pint glass jars—			
O. M. Lord, Minnesota City	$10.00		
D. Cook, Windom		$8.00	
Aug. Wittman, St. Paul			$6.00
Collection, not in glass—			
D. Cook, Windom	5.00		
W. L. Parker, Farmington		4.00	
Aug. Wittman, St. Paul			3.00
Aitkin—C. W. Sampson, Eureka	1.00		
Black Hawk—D. Cook, Windom	1.00		
Cheney—			
Clinton Coffin, Hamline	1.00		
J. R. Cummins, Washburn		.75	
H. F. Busse, Minneapolis			.50
De Soto—			
C. Coffin, Hamline	1.00		
A. Geismann, St. Paul		.75	
D. Cook, Windom			.50
Forest Garden—			
C. Coffin, Hamline	1.00		
W. J. Over, Stillwater		.75	
W. H. Brimhall, Hamline			.50
Hawkeye—			
O. M. Lord, Minnesota City	1.00		
W. L. Parker, Farmington		.75	
D. Cook, Windom			.50
Mankato—			
J. R. Cummins, Washburn	1.00		
D .Cook, Windom		.75	
New Ulm—			
L. H. Bailey, Elk River	1.00		
O. M. Lord, Minnesota City		.75	
Ocheeda—			
O. M. Lord, Minnesota City	1.00		
D. Cook, Windom		.75	
Rockford—			
H. F. Busse, Minneapolis	1.00		
Gust Johnson, Excelsior		.75	
D. Cook, Windom			.50
Rollingstone—			
O. M. Lord, Minnesota City	1.00		
D. Cook, Windom		.75	
W. L. Parker, Farmington			.50
Surprise—			
C. Coffin, Hamline	1.00		
O. M. Lord, Minnesota City		.75	
H. F. Busse, Minneapolis			.50
Weaver—			
H. H. Heins, Lydia	1.00		
C. Coffin, Hamline		.75	
D. Cook, Windom			.50
Wolf—			
W. L. Parker, Farmington	1.00		
H. H. Heins, Lydia		.75	
J. R. Cummins, Washburn			.50
Wyant—			
W. S. Widmoyer, Dresbach	1.00		
O. M. Lord, Minnesota City		.75	
D. Cook, Windom			.50
Windom—			
D. Cook, Windom	1.00		

	1st Prem.	2d Prem.	3d Prem.
Seedling, to equal or excel the De Soto plum, never having received a premium at the Minnesota State Fair—			
Martin Penning, Sleepy Eye	5.00		
Chas. Hause, Mendota		3.00	
Brand & Sons, Faribault			2.00
Pears—			
J. R. Cummins, Washburn	5.00		
C. Wedge, Albert Lea		3.00	
Peaches—			
A. D. Leach, Excelsior	2.00		
W. S. Widmoyer, Dresbach		1.00	

SUNDRIES.

Sand Cherries—C. W. Sampson, Eureka	2.00		

FLOWERS AND PLANTS.

(For Professionals.)

	1st Prem.	2d Prem.	3d Prem.	4th Prem.
Collection of foliage and decorative plants—				
R. J. Mendenhall, Minneapolis	$35.00			
E. Nagel & Co., Minneapolis		$30.00		
Jacob Hartman, Minneapolis			$20.00	
John Vasatka, Minneapolis				$15.00
Collection of greenhouse plants—				
R. J. Mendenhall, Minneapolis	20.00			
Jacob Hartman, Minneapolis		15.00		
John Vasatka, Minneapolis				5.00
Collection of climbing vines—				
Jacob Hartman, Minneapolis	2.00			
E. Nagel & Co., Minneapolis		1.00		
John Vasatka, Minneapolis			.50	
Collection of five hanging baskets, one of a kind—				
Jacob Hartman, Minneapolis	4.00			
R. J. Mendenhall, Minneapolis		3.00		
Collection of coleus—				
Jacob Hartman, Minneapolis	2.00			
John Vasatka, Minneapolis		1.00		
Collection of tuberous-rooted begonias—				
E. Nagel & Co., Minneapolis	4.00			
John Vasatka, Minneapolis		3.00		
Single specimen palm—				
R. J. Mendenhall, Minneapolis	4.00			
Jacob Hartman, Minneapolis		3.00		
John Vasatka, Minneapolis			2.00	
E. Nagel & Co., Minneapolis				1.00
Collection of geraniums in bloom—				
Jacob Hartman, Minneapolis	4.00			
John Vasatka, Minneapolis		3.00		
E. Nagel & Co., Minneapolis			2.00	
Collection of carnations in bloom—				
E. Nagel & Co., Minneapolis	3.00			
John Vasatka, Minneapolis		2.00		
Jacob Hartman, Minneapolis			1.00	
Vase filled with plants at the fountain in horticultural building—				
E. Nagel & Co., Minneapolis	4.00			
Jacob Hartman, Minneapolis		3.00		
R. J. Mendenhall, Minneapolis			2.00	
John Vasatka, Minneapolis				1.00

CUT FLOWERS.

Collection of asters—				
J. Hartman, Minneapolis	3.00			
E. Nagel & Co., Minneapolis		2.00		
R. J. Mendenhall, Minneaepolis			1.00	
Collection of carnations—				
R. J. Mendenhall, Minneapolis	3.00			
John Vasatka, Minneapolis		2.00		
E. Nagel & Co., Minneapolis			1.00	
Collection of roses—				
R. J. Mendenhall, Minneapolis	3.00			
E. Nagel & Co., Minneapolis		2.00		
John Vasatka, Minneapolis			1.00	
Collection of petunias—				
J. Vasatka, Minneapolis	2.00			
Mrs. Geo. Mohler, St. Paul		1.00		

DESIGNS, BASKETS AND BOUQUETS.

	1st	2d	3d	4th
Floral design, Gates Ajar, 30-inch—				
E. Nagel & Co., Minneapolis	$15.00			
R. J. Mendenhall, Minneapolis		$10.00		
J. Hartman, Minneapolis			$6.00	
John Vasatka, Minneapolis				$4.00
Twelve-inch basket of flowers—				
R. J. Mendenhall, Minneapolis	5.00			
E. Nagel & Co., Minneapolis		3.00		
John Vasatka, Minneapolis			2.00	
J. Hartman, Minneapolis				1.00
Pyramid bouquet—				
E. Nagel & Co., Minneapolis	3.00			
J. Hartman, Minneapolis		2.00		
R. J. Mendenhall, Minneapolis			1.00	
J. Vasatka, Minneapolis				.50
Hand bouquet, 9 inches across—				
E. Nagel & Co., Minneapolis	3.00			
R. J. Mendenhall, Minneapolis		2.00		
Jacob Hartman, Minneapolis			1.00	
J. Vasatka, Minneapolis				.50
Bridal bouquet, white flowers—				
R. J. Mendenhall, Minneapolis	3.00			
E. Nagel & Co., Minneapolis		2.00		
J. Hartman, Minneapolis			1.00	
John Vasatka, Minneapolis				.50

PLANTS.

(For Amateurs.)

	1st Prem.	2d Prem.	3d Prem.
Single foliage plants—			
W. H. Turner, St. Anthony Park	$1.50		
A. A. Brown, Minneapolis		$1.00	
Single geranium, in bloom—			
Laura Bell Brown, Minneapolis			.50
Single begonia, in bloom—			
Mrs. A. A. Brown, Minneapolis			.50

CUT FLOWERS.

Collection of asters—			
M. R. Krause, Hamline	2.00		
Mrs. Geo. Mohler, St. Paul		1.00	
D. Gantzier, St. Paul			.50
Collection of coreopsis—			
D. Gantzier, St. Paul	2.00		
Collection of dahlias—			
D. Gantzier, St. Paul	2.00		
Collection of everlasting flowers—			
M. R. Krause, Hamline	2.00		
D. Gantzier, St. Paul		1.00	
Collection of nasturtiums—			
Nellie McCammon, St. Anthony Park	2.00		
Emma V. White, Minneapolis		1.00	
Hattie Caldwell, St. Anthony Park			.50
Collection of pansies—			
Mrs. Geo. Mohler, St. Paul	2.00		
M. R. Krause, Hamline		1.00	
D. Gantzier, St. Paul			.50
Collection of verbenas—			
F. H. Gibbs, St. Anthony Park	2.00		
M. R. Krause, Hamline		1.00	
D. Gantzier, St. Paul			.50
Collection of zinnias—			
Emma V. White, Minneapolis	2.00		
M. R. Krause, Hamline		1.00	
D. Gantzier, St. Paul			.50

CLASS 70½.

Mushrooms—	
Micological Society, Minneapolis	$30.00

MUSHROOMS.

A FEW COMMON VARRIETIES, WHERE TO FIND THEM AND HOW TO COOK THEM.

W. M. BABCOCK, MINNEAPOLIS.

The Oyster Mushroom (Pleurotus ostreatus).

Frequently you will see a shelf-like fungus growing on a tree or stump in the woods, varying from the size of a small tea plate to a mass weighing as high as twenty pounds. Examine the next one you see. If it is greyish white or a tawny grey on top, white underneath, with the gills lying close together, and substantially free from worms, cut the fungus off and take it home. Lay it on a sheet of paper and leave it for a couple of hours, and it

will deposit a white or slightly lilac dust on your paper. If so, you have the famous oyster mushroom or one of its family. Wash it and fry it in butter and season to taste. It may also be cooked just like an oyster.

The Shaggy Mane (Coprinus comatus).

By the roadside, on waste or filled grounds, you frequently see a cluster of little whitish, oblong balls poking their heads through the sand. They look more like goose eggs, with dirty grey or tawny tops and shaggy coats. Some are tightly closed, others more open and again others dripping from the margin with a nasty black ink.

You have found the famous "shaggy mane" mushrooms. Take home a basket full of fresh ones, selecting only those that are pure white underneath, as the pink and black ones will be spoiled before you will have an opportunity to cook them. Prepare them as given in the receipt for shaggy mane stew, and do so as soon as possible, for they will not keep over twelve hours in warm weather.

The Ink Cap (Coprinus atramentarius).

A brother of the mushroom just described is the ink cap. It may be described as looking much like a tightly closed parasol of a mouse grey color.

It grows by the roadside and in open woods or in waste places, in clusters. It is not so common as the shaggy mane, but more delicious. It is, like it, to be distinguished from all other families of mushrooms by the fact that when old it dissolves to ink dripping from its edges. Once perfectly identified, you will always know it again, and where once found you may look for again in the fall of the year each season. In size it is about two inches high and as broad. It is to be cooked like the shaggy mane or eaten raw in a salad.

Puff Balls.

Puff balls are found of all sizes from those no bigger than your thumb to the giant as large as a peck basket. The next time you see one, resist the temptation to use it as a football, open it, and if pure snow white inside take it home, peel it, slice it very thin (say a quarter of an inch), fry it quickly in a little butter, season with salt and pepper, and lemon if desired, and you will have a most delicious omelette. A large one will furnish a meal for several families.

Puff balls look at a distance like large white or silver grey cobble stones and are found in old pastures soon after a rain.

Once you have found them there, you may expect to find them in the same locality year after year. They should not be used if they show the least shade of yellow, as this is a sign of decay.

All puff balls are edible if pure snow white inside, but those having a stem are not as good.

Common Field, or Meadow, Mushroom.

In old pastures you frequently see the field, or meadow, mushroom. It is white or greyish on top, grows on a white stem and is from one-half to four or more inches across. It has pink gills, which turn brown as the mushroom grows older. It usually has a somewhat ragged collar around the stem, which in young specimens encloses the gills entirely.

If you are in doubt about the specimen, lay it on a piece of paper gills downward and in about two hours, if not too young, it will deposit a brown dust. This is sure mark, if taken with the pink gills and collar round the stem. Look out for worms in meadow mushrooms. Fry in butter or broil cap downward, with a little butter in the upturned gills. Season to taste.

Caution.

In digging and gathering these mushrooms care should always be taken to examine every single specimen and dig up its root. If it shows any trace of a little cup out of which the stem grows, or any patches as if from the remains of a collar at the bottom, leave it alone, as such a specimen probably belongs to the Volvaria group and must be identified by an expert before it is safe to use.

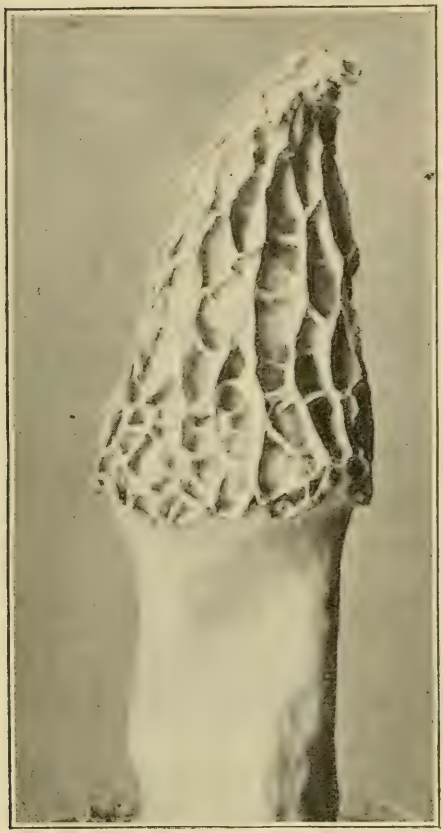
The only safe rule is: Never gather a mushroom growing out of a cup or showing any traces of it, except for scientific purposes. Never mix such with others destined for the table. Any mistake or lack of care here may be fatal.

Shaggy Mane Salad.

Peel and wash the caps, salt a little and serve either broken in pieces or whole, putting a teaspoonful of mayonaise dressing in each cap.

Mushrooms can be used nicely with lettuce.

The Common Morel, or Honeycomb, Mushroom.



The accompanying cut shows it better than I can describe it. It grows early in spring in old orchards and in woods and varies in color from a dead frozen leaf green to a bright buckskin yellow, and in size from an inch in height to five inches. No mistake is possible, as there is nothing else like it. Can be fried or stewed, also dried for winter.

Receipt for Stewing Shaggy Manes.

Peel the caps, wash out grit (best under a faucet) and in as little water as possible, because the mushrooms soak water. Put tablespoonful of butter in a hot stewpan, and when melted the mushrooms. Stew in their own liquor over a mild fire for ten or fifteen minutes; season with salt, pepper and lemon to taste. A little milk or cream may be added if desired. Do not be afraid of any that turn black in cooking. Cook till very tender.

Beefsteak and Mushrooms.

Prepare your steak as usual and fry a few mushrooms in the gravy and pour over the steak.

Successful Treatment for Potato Scab—In experiments at the Kentucky Experiment Station, corrosive sublimate treatment for potato scab was the most effective tried. Four to 4½ oz. of the sublimate was dissolved in 30 gallons of water. The seed tubers were allowed to remain in the solution 1½ hours. Seed so treated produced potatoes almost free from scab. If they were affected in the least the scabby potatoes were very few and the scabs quite superficial. Untreated plants while they produced almost as heavy a yield of potatoes, contained a great many scabby ones which had to be thrown out entirely, while the remainder of the rows were inferior in quality. Remember that care must be used in handling corrosive sublimate, which is a poison.

THAT WONDERFUL INSECT, THE BEE.

MRS. F. C. MILLER, ST. PAUL.

That wonderful insect, the bee, is, in some respects, far ahead of mankind. In these latter days of the nineteenth century, men are just beginning to see the great selfishness of individualism and to realize the advantages of co-operation. This is something which the bee knew thousands of years ago. Long before the people of Israel bowed low before the royal David in Jerusalem, the bees paid their respects to a royal mistress. The house of David is gone, and the people of Israel are scattered throughout the world, but the queen bee, a head taller than any of her subjects, still sways the scepter. The hive is the most ancient communal residence in the world, and bids fair to outlive all human institutions. Socially considered, man is in only one respect ahead of the bee, and that is, man has the ability to advance to something higher and greater. This has been denied to the bee, for what he was in the days of David he still remains and possibly may when the last trace of man has disappeared.

We look with wonder and pride on man's achievements. How he transforms the face of nature! How cities spring up as if by magic at his touch! How he has mastered steam, and compels it to carry him safely over mighty ocean and vast continent, work which in the near future he will have done by electricity! But if we could look with trained eyes upon the work done by insects, and especially bees, and realize the amount of that work, and how it too, no less than man's, has changed the face of nature, our admiration would not be all for ourselves.

It is certainly wise to occasionally listen to those who study bees from love of nature, not love of grain (or its equivalent, honey), which beekeepers are too apt to do. Naturalists look upon the bee as one link in a long chain, not as we are in danger of doing, as the chain itself; and of all naturalists of the present day, none has cast a kindlier eye upon insect life and especially upon bees and ants, than Sir John Lubbock. As beekeepers, we are apt to think that the bee stands at the head of insect life, and considering how it can be induced to work for man, I think it is entitled to the first place, but Sir John Lubbock has established the fact that the ant is far superior to the bee in the scale of intelligence, indeed, ranks next to man in that respect; because ants not only have fine social organizations, large communities and elaborate habitations, but they also build roadways, have domestic animals, and even, in some cases, slaves. This ought to induce many a worthy beekeeper, whose hives are invaded by a well-disciplined army of ants, to look with a sympathetic eye, and even with some admiration, upon these intelligent marauders.

In industry ants are not surpassed even by bees and wasps, but it is in the development of plants and the coloring of flowers that winged insects, and especially bees, have played a very important part. Naturalists are now agreed that all flowers were at first green and inconspicuous, as many yet remain—for instance, the oak—and in such cases the pollen is carried from flower to flower by the wind; while in all large and brightly colored flowers this is effected by the agency of insects.

There is little doubt that bees possess a sense of color, and to prove this Lubbock carried on a number of very interesting experiments. He placed honey on blue paper, and about three feet off he put a similar quantity on orange paper. He then put a bee on the blue paper, and after she had got a

load of honey and returned twice, he then transposed the papers, but she returned to the honey on the blue paper. After she made three more visits, always to the blue paper, he transposed them again, and she again followed the color. He made many similar experiments using many different colors during the same experiment, and found that a bee placed on any particular color invariably returned to that color, but he did not attribute the fact to any preference for the color but simply because it happened to be placed on that color.

He next tried to determine whether bees have any preference for one color over another, a thing which some naturalists have denied. He took slips of glass, and pasted on them slips of paper colored respectively, red, blue, green, orange, white and yellow. He then put them on a lawn, in a row, about a foot apart, and on each put a second slip of glass with a drop of honey. He also put with them a slip of plain glass with a drop of honey. His plan was, when the bee returned and had sipped for a quarter of a minute, to remove the honey, when she flew to another slip. This was taken away, and she went to a third; and so on. In this way he induced her to visit all the different colors before returning to the hive. When she had gone to the hive he transposed all the glasses with the honey and also moved the colored glasses. So, as the drop of honey was changed each time, and also the position of the colored glasses, neither of these could influence the selection by the bee. He repeated the experiment a hundred times, using different bees, and in different places, under varied circumstancs, and always with the same result; they showed a decided preference for blue. He then tried a series of experiments, in which the bees had been trained for three weeks previously, to come to a particular spot on a lawn, by placing honey on a plain glass. This would naturally give the plain glass an advantage, nevertheless the blue still retained its pre-eminence. Lubbock has also shown why blue flowers are not more common, something we would naturally expect if bees have a preference for that color and also have much to do with the origin of flowers. He believes the explanation to lie in the fact that blue flowers are the most highly specialized and that all blue flowers have descended from ancestors in which the flowers were green, and that they have passed through stages of white (or yellow), and usually red, before becoming blue. Among violets, for instance, we find some yellow and some blue, and in this case yellow was the original color.

Other naturalists have also pointed out that blue flowers, which, according to this view, are descended from white or yellow ancestors, passing in many cases through a red stage, frequently vary, as if the colors had not had time to fix themselves, and by atavism assume their original color. Many blue flowers are often reddish or white, others normally blue, but occasionally yellow. On the other hand flowers which are normally white or yellow, very rarely vary to blue. However, Lubbock thinks that his experiments show that bees prefer one color to another, and that blue is their favorite.

If then, we consider the work of the bee, how much we must be impressed with its permanent character compared to man's. Whole races of men have come and have withered away into the dust from which they spring—and what remains of them? We know that the whole continent on which we live has in times past been inhabited by races of men that came—no one knows from where—and passed away—leaving as monuments to future generations—what? A few heaps of bones found here and there, strewn

over the land, or when they worked more in accord with nature herself, a few grassy mounds. But how different with the work done by the bees! What was done ages ago by them is still seen in the color of some flower or other. They, indeed, seem to permanently change the face of the earth, and nature, in turn, seems to preserve their work, while man's she quickly obliterates.

THATCHING FOR SUN SCALD.

PROF. S. B. GREEN, MINN. STATE EXP. STATION.

It is a mean fellow that will wish other people trouble simply because he has trouble himself. But nevertheless most of us are so constituted that we like to know something of the trials of other people; and if we find that they have the same trials that we have and are bearing them well it makes ours easier to bear. Now, while I did not rejoice to find that in many parts of Germany they are very much troubled with sun scald, yet there was much inter-

THATCHING FOR SUN SCALD.

est to me in noting the ways in which they attempt to overcome it. The accompanying illustration is from a photograph that I made in the forest garden of the Forest Academy, at Geissen, Germany, showing the way in which they protect the bare trunks of spruce trees from sun scald by tying on small boughs—a sort of thatch, as it were, on the south sides of the trees.

EVERGREENS IN DENMARK.

L. P. H. HIGHBY, ALBERT LEA.

It is perhaps difficult for an American who has not been abroad to imagine just how a forest in Europe appears. It should be borne in mind that the forests there have been under man's care for a very long time; also that in Denmark, for example, the land is worth from $150 to $300 per acre, and that taxes are very high. Hence, it is necessary that the best results obtainable should be aimed at. The forester will to that end see that no ground is lying idle, that the tree best adapted to the ground actually occupies it, and that the trees are thinned in due season so as to allow development of the fittest. You will there see no dead trees or dead limbs, as such are picked up at least once each week by the poor people; neither are there any stumps in the ground, as it pays well to grub them for the sake of the fuel they contain. These facts put together give the forests of Denmark a very pleasant and garden-like appearance, and they are always admired by American visitors.

Of the deciduous trees the European birch and English oak are the most important. An ordinary sized beech costs from $10 to $20, and I remember one very large specimen near my home which was, I believe, sold on the root for $106.

Of the conifers the Norway spruce is the most common, although other varieties are fast taking its place. The spruce are planted in rows about as close as we here plant corn and are thinned every few years, the trees cut down being sold at auction.

As to windbreaks the Norway spruce is no more a success in Denmark than it is in Minnesota. It cannot endure the quite severe wind that constantly sweeps over the kingdom. The Norway spruce is, however, grown much farther north than Denmark, and one form of the tree is called the polar spruce, and is found only north of the 67th parallel. This tree is hardier than the common Norway spruce; it grows slower, has a thicker foliage and is undoubtedly the variety that should be grown here, if any of the Norway spruce.

The concolor does well in Denmark, and will outgrow the Norway spruce; so will the great silver fir, imported from British Columbia.

The Caucasian silver fir is doing splendidly. This tree, by the way, ought to do well in Minnesota. It starts growing very late in the spring and takes no notice of 25 degrees below zero for a whole week.

The Sitka spruce is giving good satisfaction. The largest specimen in Denmark measures 80 feet and is but forty years old. It is said to do well on windy locations.

The twisted pine (Pinus contorta) of the western part of this continent, is grown in Denmark. Some fifteen-year-old trees measure 24 feet. It is said to be indifferent to low temperature, and is well adapted to peaty soil.

Of all the imported varieties none are of greater importance than the mountain pine and the mountain spruce.

A large portion of Denmark consists of heath or dunes, where the ground is so barren that for practical use it is little better than a desert. If once plowed it will not overgrow again, but the wind sweeping over it will produce a sandstorm that covers up any little struggling plant. A good many years ago a company, assisted by the government, began to experiment for the purpose of converting those heaths into forests. Many vari-

eties of plants were tried and failed until the mountain pine was given a chance. It does well on the very poorest soil, and on account of its spreading habit it quickly covers the ground and prepares it for the mountain spruce.

The tar of the mountain pine is already an article of export from Denmark and from this tree is derived acetic acid, used for making vinegar and for dyeing cotton; while its wood is used for the manufacture of chairs and charcoal. The mountain pine is greatly in demand, being of extra value.

The forester of Denmark is very cautious when selecting his seed. Our farmers in Minnesota have learned that it is good policy for them to plant Minnesota grown trees, but few understand how important it is that the seed from which those trees were grown should have been raised at home or in some locality with similar climatic conditions. I would rather have a red cedar grown in Tennessee from Minnesota seed than one grown in Minnesota from seed gathered in Tennessee. The best tree, though, would be one grown in Minnesota from Minnesota seed. The Danes understand this, and that is why their leading seed house states in its catalogue the location where each variety of seed was gathered.

When a political candidate solicits my vote, I reckon that I have a right to know something about his views and principles before voting; but I submit to you that, if that is so, I have the same right before I buy a tree to know where that tree was grown and from what seed. If I fail to inquire it is not to my credit.

HARDY APPLE STOCKS, ETC.

PROF. N. E. HANSEN, D. D.

(Extracts from a letter to Wyman Elliot.)

"The specimen crab you send is evidently one of the hybrid crabs, as th calyx is persistent. Its value for stocks would have to be proven by experiment. If the tree is perfectly hardy, so much so that the seedlings will be hardy the first winter after sowing the seed, even when the temperature reaches 40 degrees below zero, with the ground bare of snow or mulch of any kind, then it will probably be safe to use. The reason why I insist so much that perhaps the pure seedlings of Pyrus baccata will be better than any of the hybrids is that it is a thoroughbred,—and such are always more fixed in their characteristics than any of the mixed parentage. Hence. it is evident that pure-bred seedlings of the primitive Siberian will be apt to give more uniform results than any of the hybrids. As you go north, also, the pure Siberians will be hardier than the hybrids. Another thing, I think pure-bred seed will germinate more uniformly, as a rule, than hybrid seed. I have heard of some evidence to this effect, but the whole subject needs to be worked out by experiment. German and Russian experience favor Pyrus baccata. These are represented in cultivation in the west by the old Cherry crab and the Yellow and Red Siberian.

"I am saving the seed of many varieties of crabs this year and hope to do my full share in settling this greatest of all questions in the apple line for the northwest.

"Your question in regard to the cherry is very interesting. The law or general rule in this matter is that all cherries with flowers in racemes will not inter-bud or inter-graft with any of the kinds whose flowers are in clusters. Of course, they can be made to unite for a time, but the union is

short-lived. Applying this rule, you will find that cultivated cherries work well on the wild pin, pigeon or red cherry (Prunus Pennsylvanica), but do not succeed on the wild black cherry (Prunus serotina). As to pears on apple, the union has been found to be short-lived. Pears would do better on hawthorn or mountain ash. I have them growing on Juneberry now two years, but the union, I fancy, will not be long-lived, owing to the excessive dwarfing of the pear-top.

"As for the Compass, if you want a nice experiment, try seedlings of this variety. The rule is that all seedlings of hybrid plants are apt to sport a great deal, as you know, and that they revert to one or the other parent, and sometimes interesting results appear, due to reversion to some previous ancestor. New characteristics also frequently appear, due to the "breaking up" of the fixity of type. I will try this with the Compass—Knudson's Sand Cherry or the Compass Sand Cherry should be the common name, because the name 'cherry' is rather misleading, as you say.

"I think it is very important that Gideon's work be traced out and constantly kept track of by the Minnesota society. We have a number of Gideon's crabs in the college orchard, and I am watching these. No. 25 is a very heavy bearer.

"I am growing some of the choicest American winter apples in pots and boxes, and using the pollen on Hibernal, and vice versa. I hope to get * * * an 'orchard house.' I am working with several odd types of the apple, including a seedless apple and a red-fleshed apple, but such work is very slow, as you know. I am working very extensively with the growing under cultivation of many of the native fruits, and expect to make a few additions to our prairie pomology.

"If you hear of any wild grape with specially large fruit, please let me know." N. E. HANSEN.

Brookings, S. D., Aug. 8, 1900.

WHY WOMEN SHOULD BE INTERESTED IN FORESTRY.

PROF. MARIA L. SANFORD, MINNESOTA STATE UNIVERSITY.

First, because they are natural conservers of the beautiful. No one denies that the cultivation of beauty belongs to woman's sphere. We all remember fondly that it was mother, who, by little touches here and there, a bit of color, a trifling ornament, a skillful arrangement of everything, made the charm of home. As Lowell puts it:

"The whole dumb dwelling grew conscious,
And put on her looks and ways."

Every home bears the stamp of the woman who rules over it, and if she be a woman of taste, she will throw a charm over the plainest surroundings, making what was bare and bleak, sweet and homelike.

Not only within the home, but around it, we see the evidence of woman's taste and refinement. The flower beds, the woodbine and morning glory, the lawn and the shrubbery, exist for her and share her care and pride. The trees, too, around many a home, were planted because the judicious and refined housewife knew their use and beauty.

It is but another step in the same direction for our women to interest themselves in forestry. It is only recognizing the truth that their influence should not be confined to their own households. Already women have

come to see that the cleanliness and beauty of the village and town are matters which concern them, and to which they should give attention and care, and already many of our towns have put on an entirely different aspect under their renovating hand.

Why should not this good work go on? Why should not women in city and country study the art of forestry and make themselves master of those wonderful resources which such knowledge puts at their command? Nature is bountiful to those who understand her secrets. Who can imagine the glory and beauty which would be added to our commonwealth of Minnesota if the women, everywhere, would set themselves to the task of making our land rich with the beauty of the forest. Long lines of shade trees would stretch out from every village; every schoolyard would be made inviting by sweet and restful shade; beside the streams would be found cool walks under the drooping branches of elm and willow; the poorest dwelling would have its sheltering tree to break the glare of the sun and teach courage and hope to the weary toiler; and in every town, the taste of the people would show itself in the skillful management of form and color—as sturdy oaks are set off by birch and ash, and pine and hemlock by clumps of maple. Parks would not be the possession of large cities alone; they would greet us everywhere.

Do you say this picture is utopian? An account of the comforts and luxuries of our homes of today would have been thought a fairy tale a century ago. A new era is dawning. Women are beginning to work together and for the public good. Why should they not, working together and rivalling each other, bring to their homes all the riches of this wonderful gift of nature—the forest? How the heart would be enlarged by such mutual service! How much greater the pleasure that would come from time and money spent in this way for the delight and benefit of all, than from twenty times the amount spent in selfish personal luxury and narrow, jealous rivalry!

What women will take the lead and set themselves heroically to this task? It will call for sacrifice; there will be discouragement and disappointment; but, "there is no dust-brush for the heart and brain like the boughs of trees." Even the mistakes and losses will be valuable lessons, and whoever engages in such noble work will find no room in her heart for petty jealousies, no time for corroding sorrow.

We need not wait until we can plan large enterprises. We can, at least, each one of us, set out this spring one tree in some forlorn spot, not too far from home, and keep it watered through the dry time. That is a good beginning. Then at our club or sewing circle, we can talk over some plan for next year, see what natural facilities our town affords, who is willing to help toward shade trees for the schoolyard or a park, or to make a beautiful avenue, reaching out from the town.

When women have become interested in trees, have learned their habits and studied their value and felt their beauty, they will naturally seek a wise preservation of our native forests. There is probably no natural gift, not even fresh air, which is so systematically undervalued and neglected as the forests. The only thought seems to be to cut them down. With any sound sense of their value, merely as timber and fuel, it would seem that we should take a little pains to restock the woodland. "Selling our farms by the half bushel" is economy and thrift as compared with the methods

of the lumbermen and the indifference and carelessness of the whole community in letting destructive fires follow his ruthless axe.

Upon this subject women should make themselves heard. They should inform themselves upon the true principles of forestry, and then earnestly protest against the wasteful slaughter of our fine old forests. Persistent effort along this line will surely be rewarded. Everywhere interest is being aroused in this matter, and in the older states important action is being taken. Let us see to it that Minnesota, with her marvelous resources in this line, takes her place in the van.

Under a wise system of forestry, all our waste land might be made to produce a valuable crop. Trees grow while we are sleeping, and millions of dollars would be added to the wealth of our state if those principles of propagation and judicious cutting, which are no experiment but have been proved effective by long practice in other countries, could be adopted here. Our state may, by this means, make provision for the constant and profitable employment of a multitude of laborers, and, at the same time, receive good returns on the money invested. Dr. Schenck, whose authority no one will dispute, in speaking of forest planting upon waste land, says, that such investments are safer than savings banks and more profitable than the best government bonds; that "there is nothing in the world yielding compound interest so regularly and surely as forestry."

Other arguments might be brought for this forest preservation. The influence of trees upon climate, in breaking the force of destructive winds, in modifying drought and effecting the water supply; for, whether or not forests affect the actual rainfall, they certainly do make its distribution more uniform.

The value of our forests is inestimable, and we should guard them jealously. They are a trust of which the future should not be robbed. We women, for our own sake, and especially for the sake of the children of whose rights we are guardians, should make sure that the work of preservation is not too long deferred. A large portion of what remains is hopelessly doomed, but that fine tract of the original pine which lies about Cass lake, and which still belongs to the government, should be kept in its grand beauty as a legacy for the past and a retreat from the noise of toil and strife into the sweet solitude of nature.

Such are the strong and urgent reasons why women should be interested in forestry.

HOW WE CONDUCT OUR FLOWER SHOW.

MRS. IDA THOMPSON, GLEN AVON, DULUTH.

The revival of flower shows in our city was due to Mrs. E. M. Bangs, secretary of Associated Charities, who suggested them as a means to raise money for that society, and they were very successful. Held in one of our large department stores, and well advertised, there was a large attendance, admission at this time being ten cents. It is surprising what can be done by one or two days of earnest work, with the place and fixtures provided. The music of the evening concert, and the general appearance of the store make it in reality a flower bazaar or fancy fair.

This idea was enlarged upon later in a public hall, when a church committee took hold of the work. They printed a program and premium list, with advertisements and advertised largely in the newspapers. This is the

business end of considering the city. The afternoon is largely for children, with a dress parade of some kind, costumes, etc. We found refreshments, good social personalities and house visitations indispensable. Looking up flowers is very interesting work. People are often unaware that they have things worth sending until some one tells them. One year fancy stalls were a great feature, the next the general decorations, such as real landscape views, with streams and fountains in miniature: Briefly, an art display with nature in the center.

Our leading prizes are good; they must be to get people to respond, otherwise who would attempt a floral piece, such as a battle ship, or medallion with soldier or sailor life size. The exhibits were few but very choice. A ship outlined upon a large easel, grounded with parsley, won a fifty-dollar bicycle. The second prize, $10.00 in gold, was taken by a handsomely built war vessel, with the most minute details in everlasting flowers. We notice the larger the number of smaller prizes the greater the interest, and careful classifying is necessary. Paper flowers were made a feature, too. Wild flowers in large groups, and house plant collections received handsome prizes; window boxes, and other novelties, etc.

Our latest change to a "Flower Show Society," has made the floral part more prominent. Hundreds of periodicals on scientific gardening; also quantities of bulbs and seeds, were given as premiums, and much knowledge disseminated. Judging is always a difficulty, and our management find an expert florist necessary. He also cares for the plants and decides the points of merit with them, for when a decorated baby is on show in a carriage a multitude is needed for safety. And we often have to fall back upon our principal patron, who delights in giving every one a blue ticket. This, however, is risky. We keep out the charity element; it only disgusts and discourages. To be disappointed helps character building. Labor is never unrewarded when knowledge is gained, for though the background of pleasure is often pain, while we are being educated we are also educating, for we have the fact before us that in our western towns beautiful things have not entered into our lives as they should. "Ever to Peter Bell a primrose was yellow," but many of our people are color blind, or the reward of toil to our flower raisers would be ten-fold. We rarely love flowers for their own sake, but as fashion dictates, or why the thousand bare dining tables, the cheerless sick rooms, while wagon loads follow the dead to their graves. On the other hand they are hoarded up too much in some cases, often shutting out the light from more valuable human flowers living at a poor dying rate in painted cans.

What an impetus the eastern pot industry would receive if we would spend a few cents in proper receptacles, and change our seeds. Life is too brief to potter over them unless you have a large house to beautify, a living to get, or employment to give to others.

Then, last, our show is well supported by "society" of all classes, with that truly better class, who, having their lives enriched in externals, share them, finding horticulture preferable to pauperculture, working out their club ideals with the workers through work. This year we sent a thousand packages of seeds to the city schools, where any tactful teacher can readily enlist a child's support in utilizing waste corners. What has been done can be done again. Millions of shows in flora came from one house of glass—the Crystal Palace. So then in conducting a flower exhibit we must con-

sider changes of plans to suit circumstances, and a wise administration of men and women who work for principles, because we advance art in decoration, science in cultivating a million living gems of nature, as well as the philosophy of the songs of Solomon, ch. 8, verse 13, "Thou that dwellest in the gardens, the companions harken to thy voice. Cause me to hear it!" —and we earnestly wish many would respond, not only to that voice, but to the State Horticultural Society, and take membership with us.

TREATMENT OF THE PLUM ORCHARD.

O. W. MOORE, SPRING VALLEY.

Writing upon this subject, I think it would be well to inquire what kind of soil is best adapted to the successful growing of the plum. This inquiry can easily be answered by simply taking notice of the locality and soil where we find the plum growing in its native state in the northwest, which is almost invariably along our streams on the rich bottom lands, which seem to be the natural home of the plum. It is not to be expected that every man desiring a plum orchard can have the above local advantages for planting the same, but it is best to conform to the said conditions as near as possible. I don't imagine that a plum orchard planted on an elevation of clay or gravel would be a very profitable investment. The economy of the plum is to take and utilize the wash from higher lands, whereby it is the gainer; but reverse the conditions, and it would surely be the loser. The plum in one respect is very much like some men that we might name, it is a great lover of riches.

As to treatment after planting, it is best to cultivate the plat to hoed crops for six or seven years with a dressing of rotted manure each year, after which time the orchard can be seeded to clover and second or seed crop of clover left on the ground, which will renew the seeding each year—but the manure dressing should be kept up.

My plum crop was good the past season, considering the age of the trees—no plum pocket whatever, and no green aphis. There was a light showing of black aphis late in the season, but they did no material damage. Tobacco smoke is sure death to the aphis. The curculio were somewhat troublesome on my Rockford and Ocheeda, which were the only varieties affected.

The varieties that I have at present are as follows: Rockford, which is a strong and thrifty grower, hardy, early and prolific bearer and sometimes needs thinning. It is dark red color, with a fine blue bloom, of medium size, a clingstone, one of the best for domestic use.

Ocheeda. A high grade plum; fruit of medium size; color yellowish red; thin skin with scarcely a trace of stringency.

Hawkeye. Not as hardy as some others; liable to crack in wet weather; wood tender; will not endure much heavy wind; a large showy fruit of fair quality, but too acid for some tastes.

Stoddard. Hardy and a fine grower, with very strong shoulders and crotches. Fruit nearly as large as Hawkeye; color red, tinged with green; one of the latest to ripen. A coming plum; good for any kind of use to which it may be put.

De Soto. The poorest growing tree that I have and decidedly the most inferior plum that I had in bearing this year. I don't wish to give the De

Soto a black eye, but it must do better for me in the future in order to escape one.

The Weaver I have consigned to the brush pile and have no further use for them.

I have the Wyant, Taylor (propagated by the late Barnett Taylor), Surprise and Rollingstone, not in bearing this year. Everything that I have in the plum line is well set with fruit buds for the year 1900.

I surmise that when my Rollingstones come into bearing that their good qualities will "Lord" it over the other sorts to that degree that many of them will have to take back seats.

STORING FRUIT FOR EXHIBITION.

In a report on this subject, made by Peter Younger, Jr., in charge of the Nebraska fruit at the Omaha exposition, he says:

"All of this fruit was gathered and placed in cold storage during the fall of 1897; most of it during the month of October; I think a few went in as late as December. Each apple was wrapped first in a sheet of waxed paper, using 9 by 12 inch sheets for small apples, and 12 by 12 inch sheets for large ones. Then another covering of common newspaper was added and the apples carefully packed in barrels, filling them up so as to require considerable pressure to get the heads in. They were stored in the cold storage room of Swift & Co., South Omaha, and the temperature did not vary over one degree from 36 degrees from the time they were placed in storage until they were removed. All of the varieties were kept in the same temperature and treated exactly alike. While some varieties (such as the Walbridge and Sheriff) disappointed us, still I am satisfied beyond a doubt that wrapping first in waxed paper, then in any common paper, is the best method of packing apples for cold storage. This double wrapping makes practically an air tight cell for each apple, thus preventing any spread of decay.

"In order to test the matter a few barrels were placed in storage without any wrapping whatever. The varieties selected for this test were Ben Davis and Wine Sap. They were placed in the same storage room and received exactly the same treatment as the others, yet fully 70 per cent of them were decayed when we took them out on June 1. Not only were they decayed, but those remaining in a firm condition were so badly discolored and had lost flavor to such an extent as to render them wholly unfit for either show or market. A few of the same varieties were wrapped simply in newspaper, not using waxed sheets. Of these about 30 per cent were in very poor condition June 1, while the same varieties, packed and stored at the same time, using the double wrapping of waxed sheets and common paper, remained in almost perfect condition as late as November 1."

Cut off burdocks below the crown just before they blossom and they will die.

VALUABLE VARIETIES OF THE NATIVE PLUM.

MARTIN PENNING, SLEEPY EYE.

Twenty-five years back, when my foreign plums were all dead which I brought from Wisconsin, I had nothing reliable to plant; today we have a plum list I am proud of, and I think every horticulturist in the northwest ought to be proud of them.

We have added to our list a number of valuable plums in the last ten to fifteen years, and in ten years from now we shall have a plum list much superior of that of today. We must not try and be satisfied with what we have accomplished, but keep on planting seed of the best plums, and some one may strike a good one at any time.

We have a plum list today that will keep us in plums for nearly two months. Our valuable plums in early ones are Aitkin, Cheney, Wood, Peach, and a number more, all reliable and hardy. I will say to all lovers of the plum, not to forget to plant a few trees of early varieties. Valuable medium and late plums are the Wyant, Surprise, Weaver and DeSoto. The first named tree is a valuable, reliable and good market plum. The DeSoto would be a fine plum if it would keep up in size, but after bearing four or five crops they run down to a small late plum. Stoddard, Hawkeye, Wolf, Comfort; these four are valuable market plums, hardy, large and reliable bearers. For canning they should be peeled, as they have a thick skin. Stoddard and Hawkeye are the best two—large and juicy, and closely alike in size, color and flavor. I have the following varieties growing, but they have not borne with me yet: American Eagle, Keith, Louisa, Smith's Red, J. B. Rue, Hart's DeSoto and Bixby. All these came to me highly recommended. I will report on them later.

Mr. Moyer: Does the New Ulm plum rot with you?

Mr. Penning: It does to some extent. It is not a very desirable plum. The tree grows crooked; it is not a nice looking tree, and the fruit is soft. It rots easily.

Mr. Elliot: In his paper Mr. Penning spoke of the De Soto as bearing only from three to five crops. I would like to know whether that is the experience of all the growers.

Mr. Lord: The oldest De Soto trees I have bear the best and largest plums. I have several varieties that increase in size as the trees increase in age. They do not deteriorate it the trees are properly trimmed and handled.

Mr. Harris: My experience is the same as that of Mr. Lord; I get the largest plums from the oldest trees.

Mr. Penning: I know from my own experience that it is a good plum if they are thinned out, but ordinarily farmers do not do that. The tree overbears, and after three or four crops it is exhausted and bears scarcely any plums for market. Mine are that way. I have trees from ten to twelve years old. I have never thinned out, and as a result they have deteriorated. That is the experience throughout the country. I cannot speak very highly of them.

Mr. Wedge: I want to say a word in regard to the De Soto. My experience is precisely that of Mr. Penning's, and I am surprised to hear that anybody else has had a different experience. It is almost uniformly true that as the trees become older they become less valuable. My original setting was a row of Forest Garden and De Soto. The Forest Garden maintains its size and its ability to bear crops, and it bears double the crops the De Soto does now, and much finer looking plums. I would not recommend any one to plant the Forest Garden, except that it is more reliable in bearing and is a longer lived tree.

Mr. Wheaton: My experience with DeSoto is that the old trees bear just as well as the younger trees. I have had them some ten or twelve years, but I am sure they bore as large plums as the younger ones did. Would a tree being on its own roots and grafted make any difference in the size of the plum? Mine are not on their own roots.

Mr. Older: Some ten or twelve years ago I bought some budded De Soto plum trees. The second year they were as nice as anything I wished to see, but in six years they never bore a good sized plum. The seventh year they had nice plums. The conditions surrounding them were the same as that of the other trees. For my part I am very partial to plum trees on their own roots.

VARIETIES OF APPLES BEST ADAPTED TO SOUTHWESTERN MINNESOTA.

C. E. OLDER, LUVERNE.

In treating this subject I must necessarily dwell on what has been my own observation and experience, on facts as we have known them to exist, and as they do exist in our part of the state today.

For the past forty years, in Iowa and Minnesota, we and our brother fruit growers have been trying to solve the question of the best varieties of apples for our locality. The apple tree that is hardy enough to withstand its cold and bleak winters, its dry and windy prairies, its numerous hot winds and occasional blizzards, fills one requirement for an apple tree for our country—an apple that is of good appearance, showy, good to eat, good to cook, of fine flavor and texture and, if possible, a good keeper.

Hardiness I place first in the requirements for an apple tree, as a dead apple tree is of little value; it must be hardy to be valuable to us. Next, the apple must be of some merit, nice in appearance, fine in flavor, good to eat or to cook, and the tree must be a good bearer. (We are still looking for it.) Lastly, a good keeper. Gentlemen, we have not, as yet, this combination in our state.

The part of the state I have the honor to represent today in this body is the extreme southwestern portion. Twenty-eight years ago, in 1871, I first landed with an ox team in Rock county—one house between Spirit lake and Rock river, not a house in Pipestone county, only two in Nobles coun-

ty; on the shores of Graham lake, a vast, treeless, trackless plain, with its magnificent stretches of undulating prairie lands, waiting for the industrious husbandman to transform, as if by magic, the entire appearance of the country, a broad, enterprising and magnificent undertaking.

Who could foresee, or even dream, at that time of the marvelous change that has taken place or of the deeds that have been accomplished? At this time, 1899, there is not a vacant quarter section of land in our county; the hillsides and valleys are dotted with splendid groves; long stretches of trees or willow hedges line our roadways; windbreaks have been established; orchards of apples, crabs, plums and cherries, with an abundance of small fruits, are bearing in profusion and perfection.

Twenty-seven years ago Mr. E. C. Abbott lost his feet in a blizzard, disabling him for farm labor. A friend set him out an orchard of apple trees. Some of those trees have gone the way of all flesh and are perished, but the king of standbys, the Duchess, are still bearing large crops of nice, smooth apples, last year producing three hundred bushels on one-half acre. As has been rightly stated, the man who plants Duchess will raise apples.

Following the Duchess, but not behind it, is the grand queen of apples, the Wealthy, with its intense desire to bear young, and regularly producing crops of nice, smooth, red cheeked, finely flavored apples, of fair keeping quality and nearly as hardy as the hardiest, an excellent, good all round apple—by far a better apple or tree raised in our country than the same variety raised in eastern Iowa. More than one-half of the apples raised in our part of the state this year were Wealthy.

Patten's Greening.—I can take you to an orchard of Patten's Greening trees set out fourteen years ago that last year bore over ten bushels of No. 1 apples to the tree, limbs loaded with apples from the ground on one side of the tree to the ground on the other side— a typical form for the country. This years they bore a fair crop, and the trees have made a good growth and are in a thrifty and healthy condition. I consider an orchard of Patten's Greening, with proper care and protection, as good and safe an investment as raising any other kind of crop. I have large hopes for this variety.

The Hibernal keeps up her record for hardiness, but being recently planted I know of none bearing at present.

Iowa Beauty is giving very good satisfaction to those who are raising them.

Tetofsky and Yellow Transparent fill an important place in our lists, being so very early, but the trees do not do as well as we could wish or as well as the varieties before mentioned.

The Malinda trees are bearing large crops every alternate year, the tree not being so hardy or so strong a grower as we should wish, like the Okabena.

This is the home of the Okabena apple, the original tree standing on the banks of Lake Okabena, at Worthington. This apple is quite a favorite with some, but has not been generally planted.

In hybrids and crabs we have the Minnesota, Whitney No. 20, Martha, Virginia, Brier's Sweet, Sweet Russett, Early Strawberry and some others that are being grown with profit and pleasure and are generally giving satisfaction, when properly cared for.

We have in our county now bearing over forty varieties of apples, crabs and hybrids, among them being the Perry Russett, Haas, Northwestern

Greening, Fameuse, or Snow, Talman Sweet, Wolf River, Plumb Cider and a host of others named and unnamed, among them being what my friend, Clarence Wedge, calls that "thing," the Walbridge.

Let those experiment who can, but for the ordinary farmer with his numberless cares and duties, the man who wants apples for his family to use, let him plant the first four varieties mentioned in this paper, Duchess, Wealthy, Patten's Greening and Hibernal, with the list of crabs given, and his children will say in after years that "our folks had apples to use when we lived at home."

Now—one word about root-grafting. I believe the time not far distant when the live nurserymen of our state will propagate on something hardier than cider mill seedlings. I know not what it will be, whether Siberian crab or something else, but I believe it is coming, and that soon.

A SELF-PROPELLING LAWN MOWER.

PROF. S. B. GREEN, MINN. STATE EXP. STATION.

London is a much prettier city than I had expected to find on visiting it. I was particularly impressed with the large number, the immense size and easy accessibility of the parks in London. Kensington Park, Hyde Park and Green Park are practically one, being a continuation of the same open space and are in the thickly set-

SHEEP GRAZING IN HYDE PARK, LONDON.

tled portion of the city. They are finely planted out with trees, and contain a nice lake, ample boulevards for walking, and many riding paths. Here is the famous "Rotten Row," which is a great resort for fine equipages and riding. On a pleasant Sunday afternoon the parks are filled with people, and the "Pleasant Sunday Afternoon League" looks after the furnishing of some entertainment, generally in the shape of a band concert. A seat and a program can

generally be obtained for 4 cents. However, no charge is made to those who wish to stand.

The elms are especially large and fine, and of fine form. The lawns are large, and kept in very nice condition, without the use of a lawn mower; and this is accomplished by pasturing them with sheep. The above photograph is one showing sheep on a lawn close to the famous Albert Memorial monument, in Hyde Park. I asked a policeman if I might go over the fence to photograph the sheep. He asked me if I had a permit to make photographs. I told him I did not know that such a thing was required. He told me that there was a fine of $5 imposed for making photographs without a license, but that I could obtain a license by applying to some public official. I told him that would take too much time and that I must have a photograph of the sheep to bring to America, and asked him if he would not go off and not see it, which he kindly consented to do, and I feel under some obligation to him for the interesting photograph above shown.

PLANTING AND CARE OF THE BLACKBERRY PLANTATION THE FIRST TWELVE MONTHS.

W. P. ROGERS, EXCELSIOR.

Did you ever realize the wonderful possibilities, in the marsh lands of Minnesota? They seem to be waiting for man to develop and reveal their hidden treasures. If you have a marsh that can be subdued, by all means get it ready for your blackberry patch. It should be ditched and drained in the fall. Be sure and get your ditch deep enough, with a good slope to it. If there is danger of the tiling being filled with sand or mud, put a wire screen over the upper end of the tile, and have the tile fit into a box. Holes should be cut into three sides of the box, and covered with wire netting, as also the hole for the tile. The box should be sunk about one-third of its height below the tile. Fill in with stones around the tile to keep the dirt from washing away and bank up solid with dirt on that side of the box.

If the marsh does not contain peat, after it is thoroughly drained the grass should be burnt off. It can then be plowed. Fall plowing is the best.

Let me give my experience with a peat marsh. The marsh contains about one-half acre in all, and I own one-half of it. Two years ago this fall when I drained the marsh I found I had on an average about a foot and a half of peat, out of which I dug about a cord of wood in logs. The question was, how to get rid of that peat? The marsh was within 100 feet of the barn and 200 feet of the house. I was afraid to burn it. A year ago this fall I was burning off the grass and did just what I was afraid to do—burned the peat. The peat took fire and got started over night in several places. I put barrels of water on it, trying to put it out. Moral: Do not try to put out a peat marsh fire after it is well started. The peat burned for two weeks until a heavy rain put it out. It burned off clean around the edges, while in the center about six inches in depth remained. I burned off most of that this fall. I would be digressing from the subject to tell of the tomatoes and cabbages I raised on a part of the marsh this

year. It is enough to say that the tomatoes paid me about fifty cents per hour for the work I put on them. You see, the weed seed was killed, so the weeds could not grow. This fall I set out an asparagus bed and will plant the balance of the marsh that I own to blackberries next spring.

I have a neighbor who has a one-third acre of marsh in blackberries. The average yield of that patch is 3,000 quarts. I have been told that if it was thoroughly drained, so that the center of the patch would yield as much as the outskirts, the yield would be 5,000 quarts. How is that? At the rate of 15,000 quarts per acre. Not fancy, but fact!

If ordinary land is to be set out to blackberries the soil should be enriched. But this can be done after the first year by mulching.

As a rule, fall plowing is the best. In April, as soon as the frost is out, harrow the ground thoroughly. You will then be ready for planting.

As to kinds. I have only tried the Snyder and Ancient Briton. They are the standard varieties. Others recommended by this society ought to be good.

Plants may be secured in several ways. If you have plenty of money, buy of the nurseryman. If you have a blackberry patch, get as many plants as you can of your own. In June of the year previous to planting, blackberry sprouts may be transplanted, like cabbage plants. They will grow into good plants by the time they are wanted. Plants may be procured cheaply by visiting a blackberry patch when they are covering in the fall. A great many plants are plowed up then. These could be heeled in till spring.

The best way, though, is to transplant in the spring. Try and get good thrifty plants, with fibrous roots. Take a marker and mark out your rows eight feet apart. If you do not intend to plant a crop between the rows, the rows should be marked across every three feet. Plow furrows to plant in. Have a boy drop the plants every three feet. If it is a bright, sunny day, the plants should be soaked in water, or kept moist by being covered. Use a short handled hoe in planting. Spread the roots and pack the dirt firmly around them.

I know most of you will object to planting three feet apart in the row. Well, there is nothing like knowing your job from beginning to end before you begin. I wish to advocate the continuous row system of culture. I would plant so that when the blackberries came into bearing there would be rows of canes, with an average width apart of about eight feet, and clumps, or hills, of from one to three canes each, at an average distance apart of about one foot. This system has the following advantages: You can get more berries off the same amount of ground; you can prune out and renew the vines better; the vines will have more room to grow; the vines can be mulched so that weeds cannot grow in the row.

Cultivate thoroughly during the growing season. Hoe around the plants when necessary. If nothing is planted between, cultivate both ways the first season. If you do not put in a crop of vegetables I assure you that you will get tired of cultivating that eight feet of empty space for nothing.

In the fall the vines should be covered with dirt.

You have heard of being puffed up with pride; you may have that feeling when the blackberry patch comes into bearing, especially when you deliver the berries to your customers and hear them say: "What fine berries you do have! How do raise such nice berries?"

The berries ought to grow thick enough so that you can pick a quart at a time without changing your position, and, perhaps, they will be so thick that you can apply the sugar and cream and eat them off the vines—but beware of the thorns!

Mr. R. A. Wright: He recommends a system of setting plants of the same year's growth. I would like to know what experience he has had in that work and with what success. It is something new to me.

Mr. Rogers: I have not had any experience myself, but I have heard it advocated in this society, and I have read of its being done. I have not tried it myself. I do not see why it should not be done with those young sprouts.

Mr. Yahnke: I have tried that method, but great care must be exercised that the plant is got out in good shape, as there ought to be plenty of dirt left on the roots when the plant is set out. If you are going to set out a new plantation I would not advise any one to set out a big patch at a time, but a small patch can be planted successfully if done right. I would choose a cloudy or rainy day and get the holes ready first. Then take a spade and take up the sprout carefully with the roots as little exposed and as intact as possible, but get the spade deep enough. It is better to have two men do the work and put down a spade on each side of the sprout and lift the plant out, and if it is set into the hole at once it will not stop growing an hour, but if the plant becomes wilted or is taken up during a hot spell it is gone. You have got to do it on a cloudy or rainy day, and then the operation will be successful.

Mr. Wright: It is expensive.

Mr. Yahnke: Yes, in one sense, but still it may save money. A man can save the job for some rainy day when there is nothing else to do.

Mr. C. W. Sampson: One season when I was shipping berries to Dakota I think I paid Mr. Birch $300 in cash for his blackberries. I did not have enough of my own, so I picked them up wherever I could. They sold in Dakota for $2.75 a case. The bushes were entirely loaded with fruit. They sent word to me they wanted them right along.

Mr. Wright: Did you do that more than one year?

Mr. Sampson: I have understood that the bushes bore good crops.

Mr. Yahnke: Does this land ever get wet in the fall so that water stands on it?

Mr. Rogers: It would be necessary to have good drainage. I have experimented along that line and picked up all the information

I could. An ordinary drain is apt to fill up. I know that several have tried the plan of putting in a box and putting on a screen so that all the water goes through two wire screens before it goes through the tile.

Mr. Yahnke: The greatest enemy to the blackberry is drouth, and we had a total failure the last two years. I do not think we have much of that land the gentleman speaks of, but if we had I hardly think it would do for blackberries. I would like to know whether anybody else has had any experience in growing blackberries on that kind of land.

Mr. Underwood: Blackberries do better on higher land. They do best on land that has a good proportion of clay in it, better than they do on rich, mucky land. I plowed up several acres of blackberries on rich land where they did not do well enough to warrant keeping. I find they do much better on higher land.

Mr. Philips (Wis.): In reference to blackberries growing on low land. One of the best papers I ever heard in Minnesota was one by Mr. Hodges, of St. Paul, on the subject of forestry. He said it was safe to plant a tree or shrub where God Almighty intended it to grow. The finest blackberries I ever saw in my life grow in northern Wisconsin in the marshes where the pine has been cut off. As you go up the side of the ridge you still find them, but they are not half the size they are on the low land. I believe the blackberry needs moisture.

Mr. Wright: I had a little experience with wet ground; it is a muck soil and laid to tile. Two years ago during a wet season a half acre drowned out entirely. I had them there three years, but the soil was too wet; it did not dry out in time, and my blackberries were killed. It also soured. I concluded blackberries did not want to be on ground where the water stands any length of time or where it is soggy. I am speaking of the Ancient Briton which I had on that ground.

Mr. Harris: I have been somewhat familiar with blackberries for sixty years, and I have seen cases, very rarely though, where blackberries grew on low ground better than in any other location, but if I had that kind of land the blackberry would be the last crop I would put on it. The blackberry will grow right along and bring the best results where it is on good clay loam, on land that will bear a good crop of corn. When you get the land over-rich, the canes are larger and the fruit is not of such good quality. You will make more money out of such land by putting it into cabbage, celery or onions than you will out of blackberries.

BEST VARIETIES OF SWEET CORN AND THEIR CULTURE.

J. S. HARRIS, LA CRESCENT.

The cultivation of sweet corn as a staple market crop is of a rather modern date, but it is a growing and often a profitable industry, and the product has become one of the common luxuries of the table. Few of the fathers of our older members ever enjoyed the pleasure of seeing it set upon the table steaming hot, at least once a day from July to November, and we, their favored descendents, can hardly realize how they managed to live without it. True, they had roasting ears for a few days, but they were of some of the varieties of common field corn.

I do not know the origin of or where the first sweet corn came from. Some of us can remember when there was but one variety, and that was known as "sugar corn," and but very few people had it. Field corn was most generally used in its place as long as it remained in a fit condition for use. Now there are more than a score of distinct popular named varieties, and it is found not only in the market but in nearly every village and farm garden, and is to be had fresh in the market from early July until nipped by the autumn frosts, and immense quantities are canned and used the whole year around.

The varieties of sweet corn differ from the field corn in that they contain a greater abundance of sugar and that the grain when ripe is much shriveled and wrinkled, and of a peculiar horny texture. It was probably known and in use by the Indians, and, I think, was mentioned by Roger Williams in a work published about the middle of the seventeenth century, but it is not mentioned by McMahon in his comprehensive work on gardening, published in 1806. As with the common corn, it is easy to fix any desired quality by using care, such as earliness, size and color of cob, quality and habit, but difficult to keep it from mixing and deteriorating if grown in proximity to other varieties or types. While it is not a very profitable crop for the market gardener who is restricted to a few acres of high priced land, farmers who are near enough to villages and large cities generally find the growing of it very profitable, it generally netting two or three times as much per acre as the field corn.

Sweet corn yields the best and is of the best quality when grown on good, deep, rich, loamy soil, but may be had a few days earlier by planting on highly fertilized sandy soil. It should not be planted here until the ground is dry enough to work nicely and the soil warm enough so that it will come up quickly, which is not usually the case before the middle of May. After it is really safe to plant, several varieties may be planted on the same date to ensure continuous succession, and then plantings of one or two of the best varieties should be made every two weeks until the first week in July, which is about the latest that we can be sure of a crop. It may be planted in drills, two and a half to three feet apart for the small, early varieties and about four feet apart for the larger and later kinds, leaving a stalk, each ten inches or a foot apart in the row, or it may be grown in hills three to four feet apart with about four stalks to each hill. The ground should be well prepared and manured before planting, and the growing crop should have very frequent and thorough cultivation, and for the earliest something is gained by manuring in the hill or drill at the time of planting. After the corn is ready for use there is considerable of a knack in handling it and getting it

to customers in the best condition. The sooner it is used after picking the better the flavor. Many market gardeners practice gathering their corn the evening before taking it to market. That is a bad practice. It should invariably be gathered on the morning of the day it is used and not later than the middle of the forenoon. If families are supplied with fresh early morning picked corn delivered to them before the heating or sweating process begins, they will use more of it and be better satisfied with it.

There is quite a knack in eating sweet corn. The only way to get full satisfaction out of green corn is to have it boiled just done and steaming hot, and then gnawing it from the cob, smearing it with prime dairy butter as the gnawing progresses. Although this operation is not an elegant one to witness, it is performed even at the best ordered tables. I believe the latest fad is to thrust a silver green corn handle into the large end of the cob to handle it by. The operation is much facilitated by drawing a sharp knife lengthwise in the center of each row in such a manner that each kernel will be split in half. When this is done the digestible and nutritious contents of the kernels will slip out and the often tough hull be left upon the cob, and the eater will call out for "another ear, please."

My choice of varieties is for earliest extra early corn, Crosby's Early, Early Minnesota; for medium early: White Champion, Moore's Early Concord, Black Mexican; for main crop and late: The Country Gentleman, Henderson, Ne Plus Ultra, or Shoofly, and Stowell's Evergreen. The Country Gentleman, Ne Plus Ultra, and the genuine Stowell's Evergreen are my favorites for main crop. The Mammoth will do to sell by the ton to canning factories.

PROTECTION AGAINST ROOT-KILLING.

C. WEDGE, ALBERT LEA.

(Read before the So. Minnesota Horticultural Society in February, 1900.)

In that portion of our country west of Lake Michigan and north of Missouri there is no menace more constantly hanging over the fruit interests of the country than that of root-killing. We had a severe and emphatic lesson in this matter during the winter of '99, but on account of a heavy protection of snow at the time the thermometer indicated the greatest degree of cold we did not fare as badly as our Wisconsin and south Iowa brethren, who, with their orchards and nurseries bare and fully exposed to a temperature of 35 degrees below zero, suffered as severe losses as have been known since the first settlement of the country.

The study of the conditions that favor root-killing and the best methods of preventing has really but just begun; but it is quite generally agreed that a dry soil in connection with deep and severe freezing is a condition that is quite certain to cause a long list of "casualties." However, with the temperature that we had last winter (1898-9) it seemed to matter little what the condition of the soil happened to be if the snow were blown off and the earth fully exposed; the moist, low places suffering fully as much as the dry exposed hillsides.

While we do not as yet fully understand the position of our enemy, and have not mastered the details of a perfect defence against his tactics, and while we have some very weak spots in our line that we scarcely know how to cover, we have worked out some methods of fortification, and discovered

some strategies that when fully developed will some day thrust our enemy out of this goodly land of our inheritance.

The first and strongest defense that we can make is by the use of a soil cover of some kind. We are told that "nature abhors a vacuum," and it certainly seems true that both by washing out, by drying out, by killing out, nature puts in some pretty plain protests against a naked soil, either in summer or winter. And so we are inclined to put ourselves in line with this general law and keep our soil covered at all seasons as far as practicable. In the apple orchard this may be done both by means of a mulch and by cover crops of various kinds. We are inclined to think that a very thorough mulch should be maintained about the trees at all seasons of the year, and to hold this in place and encourage the snow to stay about the trees and reinforce the mulch, we favor a system of planting that will make it convenient to grow raspberries along the orchard rows. The bushes will add somewhat to the income of the orchard, with but a small amount of care, and contribute and hold in place a large proportion of their own leaves and dead twigs, as well as those of the trees above them. As the trees become old and too large and shady for the berries we presume that there is nothing better than a cover of red clover, the crop to be cut and left on the ground and reinforced with a liberal dressing of coarse manure under the branches of the trees.

In the nursery a cover crop is the only practical protection that can be given, and buckwheat and oats are the two crops most commonly used. Neither is perfectly satisfactory; buckwheat is not sufficiently leafy, and oats take too much moisture from the soil. We are thinking of trying a combination of the two, and have seriously in mind the trial of rape, sowed the latter part of July. This latter crop, if we had sufficient moisture to start the seed, would surely give a very warm leafy covering, but with plenty of snow it might live through the winter and be troublesome to get rid of in the spring.

If Prof. Hanson's recently recommended trial of the little Siberian bush crab as a stock for the apple proves all that may be hoped for it, we may not always be at the mercy of a winter drouth, as in our nurseries we surely are very largely at the present time.

Root-killing among the small fruits is a very hard matter to provide against, and yet it is a very serious cause of loss to our berry growers. Here a cover crop is out of the question and a mulch would be too expensive and frequently of little avail. Perhaps all we can do is to see that the soil does not lack moisture, which is also out of the question unless we have provided a system of irrigation. But we are of opinion that with plenty of moisture root injury would generally be avoided, and as in our average seasons systematic irrigation would add largely to the crop, and that, too, at the time the highest prices prevail, we think that the ability to secure a cheap and effective system of irrigation is the first thing that a berry grower should take into consideration in choosing a location for his business.

Fortunately in the roots of the wild plum we have a stock upon which to graft the plum that is just about ironclad, and we think that the plum orchard is so much safer from insect enemies when the ground is free from litter that the only protection that we recommend is the dust blanket in summer and a well loosened soil for winter. If, however, the plum is grafted on the peach or some of the foreign stocks, it will need even more careful winter cover than the apple.

Secretary's Corner.

A NURSERY CHANGE.—Hawkins Bros. of Minneapolis, have lately dissolved partnership, and one of the brothers, A. A. Hawkins, has started a nursery on the east side of Lake Minnetonka, with postoffice at Chowen.

PREMIUMS ON FRUIT FOR WINTER MEETING.—While it has not yet been formally decided, it is likely the premiums offered at the coming annual meeting will be very similar to those offered last year. Any suggestions on this subject addressed to the secretary will be thankfully received. Each member attending should bring something to add to the large show of fruit we confidently expect to make on that occasion.

ARE YOU PLANNING TO ATTEND THE ANNUAL MEETING?—Of the nearly 900 members belonging to this society at least 200 should be in attendance at the annual meeting, which convenes in Minneapolis December 4-7. Reduced railroad rates will be secured, and plans should be arranged with reference to the occasion. Those who have met with us need no urgent invitation to come again, and to others it can only be said if they come once they will be loath to miss a subsequent meeting. Come!

ARE YOU COMING TO THE ANNUAL MEETING?—If you intend to be present please notify the Secretary, A. W. Latham, 207 Kasota Block, Minneapolis, as soon as convenient and state whether or not you wish hotel accommodations provided for you. In arranging for this meeting it will be a great assistance to have this information. Rates will be about as heretofore, from 50 cents to $1.00 per day per room. There are other reasons why it would be advantageous to know as to the number of members likely to attend. Send a postal.

PROMPTNESS IN THE HORTICULTURAL BUILDING.—The members of this society who had to do directly or indirectly with the installation of exhibits in the Horticultural Building at the late Minnesota State Fair are fairly entitled to be self-congratulatory at the absolute readiness of the building and all its contents when the fair opened at eight o'clock Monday. Other departments may have done as well, but we are informed that some were unfortunately unable to. Without the hearty co-operation of the exhibitors it would have been impossible to have attained this high standard, and it goes without saying that those in charge appreciate at its high worth such an earnest and effective spirit as herein displayed. If we can do better another year we certainly shall with such backing.

RETURN OF PROF. S. B. GREEN FROM EUROPE.—After an absence of four months in Europe, Prof. and Mrs. Green were at home again September 6th, and the genial Professor put in an appearance at the Horticultural Building, in the State Fair, the same day. We were heartily glad to see him at home well, and glad also that we are to profit with others in the results of his trip. We shall receive of the gleanings from this excursion through these columns as well as elsewhere.

WHAT SOME SAY OF US AT THE STATE FAIR.—"The management has encouraged the horticultural department, and the result is that that has become the pride of the state. It is an unusual surprise and delight to all who see it; it really shows the wonderful development of fruit growing in Minnesota, where our pioneers imagined little could be done with fruit. Thanks to the efforts of Mr. Underwood, Elliott, Latham and other leaders of the State Horticultural Society, that department is beyond criticism and merits only unlimited praise."—*Northwestern Agriculturist.*

"Again the horticulturists of Minnesota did themselves great credit, and added immensely to the fame of the state as a producer of fruit, by making an exhibit that excited the surprise and admiration of the thousands of visitors who constantly thronged the large and artistically decorated hall that is wholly devoted to their use."—*Farm, Stock and Home.*

FIFTY NURSERIES IN MINNESOTA.—There is in the hands of the secretary a list of fifty so-called nurseries purporting to be growing and selling nursery stock in this state, and this list is thought not to contain the name of any one who is a dealer only, though it may. It was hoped that this list might be verified so as to warrant its publication, but the evident unwillingness of many on it to send in the facts necessary to substantiate a right to a place there is still making it inadvisable to send it out. Undoubtedly most of the member are doing a "straight" nursery business, but an uncertainty as to some and desire to do no one an injustice is still withholding the list from the public, and likely to continue to do so. Any member can have access to the list in this office, however.

NOTES FROM CROOKSTON AGRICULTURAL EXPERIMENT STATION.—"I have no apples to send to the fair, nor is it likely I shall have any for some time. I have started a few trees each year, so this spring I had forty trees which had lived three and four years. I lost one Malinda last winter; all the others are all right apparently. There are some that began to dwindle away toward the close of the drought; some are going to survive. Patten's Greening, which has promised so well in former years, is losing ground. Hibernal and Charlamoff seem to be the most encouraging now. I have about fifty seedlings of the Pyrus baccata, which are growing very nicely. I am beginning to plant seed from the more hardy varieties.

"I have planted a great many plum trees, both native and cultivated. Most of the trees grow well but have not come into bearing yet. I had a small crop of currants and strawberries this year. This is the first time the small fruit has been bearing. The forest trees formerly planted are beginning to make a respectable showing. I begin to get some comfort out of the planting, and hope in the future to have some results of value to publish."

T. A. HOVERSTAD, Crookston, Minn.

C. G. Patten

CHARLES CITY, IA.

[See Biography.]

THE MINNESOTA
HORTICULTURIST.

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Biography.

CHARLES G. PATTEN,

CHARLES CITY, IOWA.

The subject of this sketch is well known to all our readers, if for no other reason, at least through the name of that hardy variety of apple, Patten's Greening, which is now so generally planted throughout the northwest. As a nurseryman and experimenter and originator of new fruits, no man is better or more favorably known in this region.

Mr. Patten was born in northern New York, on what then might have been called the frontier, in the year 1832. From his earliest years he must have shown an interest in pomology, as he knew every orchard in his vicinity, although, as he writes, he "was almost too timid to enter one unless strongly urged by the owner to do so." That he began to make observations in fruit growing early is also shown by the fact that he noted that cherries were at home on the islands of the St. Lawrence river and its adjacent shores, while a few miles inland they were scarcely to be found.

At the age of sixteen he removed with his father's family to the neighborhood of Burlington, Wis. The first thing to attract the attention of young Patten in his new surroundings was the fruit growing there. Peach trees six inches in diameter were to be found on the Fox river a few miles below Burlington, and he soon made the acquaintance of an old resident who had a small orchard of peaches, apples, plums, pears and cherries.

During the summer that he was seventeen years of age, he worked for a farmer who lived four miles south of Burlington, on a place adjoining the nursery of a Mr. Bell. That his thoughts were even then strongly turned in the direction of what afterwards became his life work is apparent, as he says, "I worked for Mr. Gardner about three months, and though while longing to get into the nursery, I never had the courage to do so, and contented myself by looking over the high board fence from the loads of hay or grain in harvest time." It was in the woods near this farm, while hunting blackberries, that Mr. Patten found the wild crab that afterward set him thinking about the development and improvement of the native apple, a result of which is the Soulard Hybrid, produced in 1874.

In his twenty-first year Mr. Patten worked upon the construction of the Illinois Central railroad, and later upon another road in southern Missouri, then being built toward Jefferson City from St. Louis. St. Louis was then but a small place, and at Chicago the court-house was a simple frame, two-story structure, surrounded on all sides by large plats of grass. During the following winter he took a contract on the Missouri road referred to, but on account of a severe outbreak of cholera in July following with all other northerners he left the state and returned to Wisconsin. He left shortly after to aid in the construction of the Illinois Central, which was completed to Freeport late that autumn.

Most of the following year was spent at an academy in Delton, which at that time was one of the enterprising pioneer towns in southern Wisconsin, near to which place his parents had removed. Here he lived within two miles of the home of Mr. Briar, the originator of Briar's Sweet Crab. The following seven years were passed with his father in conducting farming operations in Dane county, Wisconsin. His first orchard was planted here, and here he grew seedling peaches and apples to bearing, although none proved to be of special value. At this period Mr. Patten had become a good deal interested in horticulture, and had considerable knowledge of the leading horticulturists of the west, and of the lists of hardy fruits and trees then recommended for Wisconsin.

In the fall of 1864, having in the meantime married Miss Anna Whittier, of Fox Lake, Wis., he removed with his family to Charles City, Iowa, his present home, and two years later began the nursery work, without any practical knowledge of it, never having seen a graft set even. His first planting was about 1,200 grafts and as many small evergreens, and different varieties of small fruits. These he removed in the spring of 1868 to the spot where his home now is, and where he has lived almost thirty-two years, which time has been constantly spent in the nursery and fruit business.

Aside from the conduct of an extensive nursery, Mr. Patten has devoted much time during this long period to his experimental work and to the growth of new varieties from seed. This article would be too long to go into the details of this work, which has been referred to often by different writers in the reports of this society. Prof. John Craig, connected with the Horticultural Department of the State University, at Ithaca, N. Y., lately visited Mr. Patten's place to study the results of his work, and I quote from an article by him in a late number of the National Nurseryman:

"I cannot refrain from drawing attention to the systematic experiments which have been carried on in this line for thirty years by Mr. C. G. Patten, of Charles City, Iowa. A careful examination of his experimental grounds raised the character of this work in my estimation very considerably. Many fruit growers plant seeds in a haphazard way and hope for desirable results. Mr. Patten's work has not in any sense been haphazard, and the results which he has secured are not only valuable pomologically, but scientifically valuable, because the facts relating to the newly produced varieties have been carefully recorded." Then follows a description by Prof. Craig of some of the results of this work, which limited space makes it necessary to leave out. He closes by saying: "This is but a brief summary of the work Mr. Patten has in hand, and it is given for the purpose of drawing attention to his painstaking and conscientious effort, for the purpose of giving credit where it is richly deserved."

Mr. Patten's usefulness is not circumscribed by his work in the orchard and nursery, as he has been for the last twenty-five years a large contributor to the agricultural and horticultural press of the country, and has occupied many places of trust and importance in the gifts of his brother horticulturists, having been several times president of the Iowa state society, as also later of the northeastern Iowa society, one of the directors of the state experimental work and a frequent delegate to the meetings of national horticultural and other kindred associations.

Mr. Patten has been a member of the Minnesota State Horticultural Society for a number of years, and a very regular attendant at our meetings, so much so that the working members of the society are largely his personal acquaintances. At the last annual meeting, upon the recommendation of the executive board and by unanimous vote of the society, he was made an honorary life member, an honor he has fairly earned by the faithful work he has done and is yet doing for the horticulture of the northwest. As Mr. Patten is still in the harness, we may expect much more from him yet in the many years of life we hope remain to him.

A. W. L.

LOCATION AND PROTECTION OF THE ORCHARD.

C. MORGAN, FORESTVILLE.

(So. Minn. Hort. Society.)

Twenty-five years' experience and observation in growing apple trees in Minnesota has forced me to surrender a great many of my preconceived views relative to where and how to plant an orchard. When I first commenced planting trees I knew all that was necessary to know about location and care of apple trees. I thought, as all new beginners do, that any kind of a hole in the ground was all sufficient and good enough and that any farther attention to the tree after being planted was only an old fogy notion, that we did not propose to follow. But I, like all others of like smartness, have to surrender my self conceit and come down off my high horse and admit that those old fogies had been doing some thinking while going through the school of experience, which I think to be the best of all schools, especially in growing apple trees for Minnesota and the northwest.

I know there has been a good deal said and written in regard to location, that only such inclines, or slopes, as north or northeast were suited to trees; that unless you had such inclines as stated above on your farm it would be useless to put out trees with the expectation of growing an orchard. I believe that a gradual incline to the north makes the best place for an orchard, mostly because the soil is generally stronger and holds the moisture better than a south incline. It is claimed that trees set on a north slope are less liable to sunscald. Speaking of inclines, let me tell you beginner there is one incline that is necessary to success in growing an orchard—it is an incline that is self adjusting; and you cannot properly plant either tree or shrub without using this incline. It is well adapted and works well either on level land or steep hillsides. Sometimes the incline is about equal to 45 degrees, especially when setting an apple tree, and quite often straining on the spinal column. I consider this the most important incline of all; if you expect to be successful in raising apple trees or small fruit, always use this incline freely, as there is no patent on it.

I also believe that one great mistake people make in setting out trees on our steep hillsides is in not setting them deeper in the ground. Most always the hole is measured from the upper side; in that case the roots are but little more than covered. The depth of the hole should always be considered from the lower side without reference as to the depth on the upper side, otherwise the roots will grow too near the surface, which makes them more easily affected by drouth and injured by severe freezing.

I have apple trees growing on all kinds of slopes from nearly a dead level to a 45 degree incline, and I also observe that where the incline is steepest the tree is less vigorous and healthy, and that the nearer you get to the foot of the hill the more vigorous and healthy the tree, regardless of which way the ground may slope. I think that results from the fact that the gradual wash of soil from above not only makes the soil richer and stronger, but it has the benefit of more moisture, two of the most important conditions necessary to tree growth.

When traveling through our hilly country you will very frequently see trees leaning at about the same incline as the ground on which they stand, and on examination you will find that it results from too shallow planting and cultivating too close to the tree, in connection with the gradual washing off of the soil until the tree can no longer maintain itself, mostly because the tree was not planted one-half deep enough. I think the same mistake is made in setting trees on prairie farms.

There has been a great deal written and much said in regard to some kind of winter protection for apple trees. When I first commenced growing and setting out trees in Minnesota I was made to believe, until I thought it was an actual fact, that an orchard could not be made to grow or live without some kind of windbreak—that there were three things that were absolutely necessary to success in growing an orchard in Minnesota: first, a steep north hillside; second, the young trees must be protected by a double row of willows or cottonwood trees; third, you would need to locate in some deep valley or mountain gorge, if you could find one, where it never got warm in summer or cold in winter. So that for one to think of putting out an orchard on the higher ground in the timber or planting an orchard on the prairie without first having his hollow square well fenced in with a double row of willows would be considered a little bit luney, or that one had money and labor to throw away. Experience and observation have satisfied your humble servant that those old time windbreaks are not essential to the growth of an orchard in Minnesota or any other state; that good cultivation and a good wire fence are the only protection necessary to the growth of a good, healthy, long-lived orchard. By good cultivation you grow a vigorous, healthy tree, you add moisture to the soil and at the same time prevent the tree from becoming choked to death with June grass; while the fence prevents the stock from taking possession and destroying it.

While traveling through our part of the country I have noticed that those who have succeeded in growing an orchard have filled the two above requirements, and have no complaints to make why their trees have not done well.

I do not consider it essential that every one should attend horticultural meetings or read articles written on tree culture in order to know how an orchard can be raised that will pay good interest on the money invested. He needs but observe how others do that succeed in that line. He can soon

learn all that is necessary to success if he will but put his observations into practice. But the great majority will do nothing of the kind, because that means lots of work and some little thinking. Consequently the nurseryman will continue to have that class as regular customers for all kinds of nursery stock; just because, as he says, he has not the time or disposition to do the work as it ought to be done. Success depends more on the man than the location.

PRESIDENT'S ADDRESS, SO. MINN. HORT. SOCIETY, 1900.

J. C. HAWKINS, AUSTIN.

Ladies and Gentlemen of the Southern Minnesota Horticultural Society:

I am glad to meet you as we come again to our annual reunion, and as your presiding officer direct your thoughts, in my humble way, to some of the interests of our organization. And while I greatly appreciate the evidences of your confidence by the duty and the privilege you have thus conferred upon me, it is with many misgivings as to my ability to interest or instruct you that I address you at this, our yearly interchange of thought and experiences. Such fraternal meetings can not fail to be profitable and pleasurable, and we should enjoy them, not alone for their educational features, but also for the social renewing of old acquaintances and the forming of new ones.

From a practical business standpoint I feel sure that no successful fruit grower can afford to miss meeting with his brethren at these horticultural gatherings and taking a part in the exchange of ideas and experiences. It matters little how much he may know about horticulture, he will certainly be greatly benefited by coming in touch with other successful men of his own vocation. May we not logically conclude, if this premise be true, that he who is but a novice stands yet more in need of the advantage of our meetings and should derive correspondingly greater benefits?

So let me here cordially and heartily invite each one within the sound of my voice, young or old, novice or expert, to just as heartily participate with us, be free to ask or to answer questions, and give your experiences. You may think your experience an unimportant one, and yet it may be just what some one else needs.

I particularly wish to impress our young people with a desire to study these things with a purpose, a definite goal to be reached. While it is undoubtedly true that some of these older members, whose locks are fast silvering, have for many years wrestled with these intricate problems confronting the fruit grower of the wind-swept plains of southern Minnesota and are capable of giving trustworthy advice and instruction all along this line, yet upon your shoulders, young friends, must soon fall these mantles, upon your shoulders be placed the burdens of the coming day. Now is your season of thorough preparation, that you prove not unworthy. You should make better horticulturists than they have been. Your opportunities are much better than theirs were. Their knowledge has come largely through the lines of experience, which, although a good teacher, is provokingly deliberate. They have rough hewn the way, and you may build upon the solid substructure of their experiences a grander edifice than it has been permitted them to build. As unto King Solomon was permitted that which

was denied his father, David, the building of the beautiful temple, I pray you take heed then, that you build, as good master builders, wisely.

As citizens of the commonwealth of Minnesota, we have much to look back upon during the year with thankfulness, in that our lot has been cast in pleasant places. As favored sons and daughters of a favored state, may we prove our worthiness by every good work our busy minds and hands find to do. A trust, my friends, is placed upon us as a society by the state of Minnesota, that so far as lies within us we will give out to the public the most reliable information that we can obtain, bearing upon all lines of advancement in the field of horticulture; from the question of soil and site to marketing and consumption, from Alpha to Omega of the horticultural text book.

As instructors to the public, I trust we shall never prove recreant to that trust. Although we may often err, as in the nature of things we are sure to do, let even our errors be honest ones, and let us manfully acknowledge them when clearly shown to be such.

Let no one present with us through this meeting consider himself a stranger to us. As we are all here to learn, do not be delicate or diffident about asking questions on any horticultural or kindred topic you may wish information about. If we do not know it all, at least we will help you willingly, freely to the extent of our ability, and this, I think, as I look over our assembly and see such members present, is not limited to very narrow bounds.

In connection with our sister societies, we collect a vast amount of information, but we do not succeed in disseminating it as we might. The value to be derived from consulting the pages of our reports, by our people at large, is not as fully appreciated as it should be. If they would only make use of the information there stored up, the oily-tongued fellow with the fancy picture book and the latest fad could not number so many victims as he is at present credited with. As regards our reports, I feel justified in saying that if Uncle Samuel would set aside the cost, to him, of Minnesota's share in his free seed distribution, which aggregates about $75,000 a year, and this share be invested in our horticultural reports at the actual cost to the state of the printing, and the reports thus obtained be judiciously distributed, the benefit to our people would be incomparably greater than it now is, for I can personally testify to the worthlessness of much of that seed and am persuaded that the reports would fulfil a much higher mission in Minnesota, although probably, judged from the greatly elevated point of view to the politician, I am grossly in error, wandering hopelessly and helplessly in the palpable mists of the valley, unable to see cause and effect, as they so clearly see from their more elevated point of view.

The reports of members will present to you general conditions during the season of fruit, plants, shrubs and trees, throughout the boundaries of our society, much better than I can do, so I will not refer to them except in a general way.

In 1898 our trees were so weakened by nearly fruitless efforts to mature the over-abundant crop hanging upon their boughs that they failed to set many fruit buds, and of these many were killed by the very severe cold in February. Here and there, however, young trees in protected locations bore partial crops, and at Mower County Fair I had the pleasure of displaying a fine fruit exhibit, although it took a large portion of the county's crops to make it.

Grapes, I believe, were the finest ever grown in the county. Plums bloomed freely, but the frost killed a large portion of the buds, and insect enemies and fungous diseases seriously injured the balance of the crop. Last year you made provision for the distribution of seedling apple trees to the members of our society, and it proved to be very acceptable and satisfactory, and I would recommend its continuance another year.

Last fall and through the winter thus far, I have had this question asked me many times, "If you were going to set a farmer's home orchard, what varieties would you plant?" I would suggest that this society should recommend a list for general planting in our territory, say twenty-four trees—i. e., apple trees, ten, crabs and hybrids, eight, and of plums, six.

The proceedings of the auxiliary societies show them to be active and progressive. They are to be congratulated upon the good work they are doing for horticulture in our state.

Now the society is in condition financially to lift something of the burden from the secretary's shoulders. I advise the payment of a salary and his necessary expenses, and the president should be furnished stationary and postage. As so far conducted the preparation of the program comes in a very busy season of the year, which makes it very difficult for the president and secretary.

I further suggest that each person in the house walk up to our agreeable secretary's desk and cause one of those silvery smiles to illuminate his physiognomy by depositing a dollar membership fee, and he will very gladly engross your name upon our society's records and thus insure to your president and secretary a good night's rest.

In making these various suggestions, I have but one aim, the prosperity of this society and through it the advancement of horticulture. I trust that you will be able to plan wisely and execute efficiently. And now at the close of this meeting I return to your hands the trust which you have confided in me the past four years. I thank you for the honor which you have conferred upon me. But more than all, I am glad of that friendly appreciation which prompted your action. And I assure you that my association with the genial, earnest, and intelligent members of the Southern Minnesota Horticultural Society will afford me many pleasant and cherished memories while I live.

MISSION OF TRIAL ORCHARDS.

A. J. PHILIPS, WEST SALEM, WIS.

This has been quite a study of mine, and during that part of my life that has been devoted to orcharding I have many times wished I had been favored with a chance to visit a good, well conducted trial orchard before I embarked in the business. It would have saved me money and time. Trial orchards are known by different names—at Madison, as experiment station; the same at St. Anthony Park; at Owatonna, as the Minnesota tree station; at Ithaca and Weyauwega, as trial acres. All private orchards are trial orchards to the extent that they are planted and managed. Particularly in the north, all experiments are really trials. Their mission is to benefit those in whose interest they are conducted. If paid for by the state, then the taxpayers of the commonwealth should be benefited. If paid for by individuals,

then they should be benefited, and the benefits in both cases will be in proportion to the number who visit those orchards or who read and heed the reports of the work being done and the results being reached in them.

Now for a trial orchard to be beneficial, several things must be observed. First, the work of making trials must be done for a specified purpose and by a person competent to do the work. Second, a competent person should be in charge to explain the work to those who come to make inquiries, and as this number is necessarily small there should be regular detailed reports made several times in each year. This gives our experiment stations and the Minnesota tree station an advantage, as a competent person is always on hand to give information at those places.

The reports I have mentioned should be published in a paper in the state having a wide circulation among farmers. Even then but few will ever know much about them. One would think when looking over Prof. Goff's class in horticulture in the winter that the young men interested in horticulture and trial orchards are plenty, but such is not the case. They are scattered over too wide an area, and many of them make a specialty of some other branch.

As a rule, horticulturists do not visit trial orchards, both public and private, enough. We know too little what other public benefactors are doing. I was impressed forcibly with this when looking over the late S. I. Freeborn's and Peter M. Gideon's work after they had departed. Many valuable trials and much valuable work for improvement in horticulture stopped right there for want of a person familiar with it to carry it on.

No one can form an idea of the vast amount of valuable work that Mr. C. G. Patten, of Iowa, is doing, unless they visit and inspect his premises. There is no cessation in this work of trial orchards; it is continuous. There are so many changes in soil and climate.

After so many years of painstaking work that Uncle Dartt has done for his state, I asked him last fall if he had produced anything that for an all around apple and tree was ahead of the Wealthy. He could not name one. I asked for the most promising new apple and tree. He said Phoenix No. 50, named for our veteran who has given his life in the labor of trial orchards. This, of course, aroused my curiosity, and I secured cions for a trial at home, and, as is unusual, I made one hundred root grafts besides topworking it some. Though he pronounced it good, I must give it a trial on my grounds, and it should be tried at Wausau.

I find one of the main features of trial orchards accomplishing their intended missions is the fact that tree planters do not put themselves in touch with them and try to learn what to plant, but give their order to the first smooth-tongued agent that calls on them, and then say you can not grow apples here. It makes one discouraged. Last fall I heard of a man five miles from my trial orchard who was going to plant 500 trees. I called on him and found him elated over some very fine Northwestern Greenings and Wisconsin Russett apples he had in his cellar. They were beautiful in February. I told him something about varieties and also told him that Wisconsin Russett trees were scarce, as they had not been propagated much. I gave him the name of one man who I thought could furnish them. But he paid little attention to the varieties I had found profitable, but before spring bought from an agent of a southern nursery his quota of trees at fifteen dollars per hundred, and the man who helped set them said he was satisfied from their

appearance that they came from several different nurseries. Now the mission of no trial orchard can reach such a man. In his five hundred trees he has not a single Wealthy.

ADVERSITIES OF THE PAST WINTER.

F. W. KIMBALL, AUSTIN.

(Read at last annual meeting of So. Minn. Hort. Society.)

I am asked to write of the adversities of last winter, a theme that for inspiration depends a good deal upon the location in which you lived and the varieties of trees that had been planted; many in Minnesota claiming little or no loss, while to the south of us in parts of central Iowa the destruction was almost complete. As near as I can learn this loss is almost, if not entirely, due to root-killing. On my own place, those I lost were undoubtedly from that cause, though why one row killed almost entire and another of same varieties, eighteen feet distant, escaped entirely unharmed, has caused with me a good deal of speculation, which has not rendered much satisfaction. Could I see a good and sure cause for the one and not for the other I should feel that in the knowledge gained I had been at least partly recompensed. Where the destruction was most complete there was almost an entire absence of snow, while, as a rule, the heavy snow of this region saved most of our trees. What this winter, in this region, devoid of snow up to the present time, may have done is problematical, but I opine that in such sections as have been bare of snow, those trees that were at all impaired last season will probably pass in their checks this coming spring.

Now what shall we do to save us in the future in our new plantings? I have all along contended that a hardy root was just as necessary as a hardy stock. I am now prepared to say that a hardy root is nine-tenths of the value of the tree. How can we get it? I had builded on this principle by using a hardy stock to top-work on; hoping to get it on its own roots and thus get a hardy foundation as well as a hardy top; but the trial winter came too quick for me, and those I lost were mostly Wealthy or Hibernal, though a few of other kinds, and while the Hibernal had thrown out roots from its own stock, they had not got sufficiently large to sustain the tree. Now what remedy? I would propose that our nurserymen gather their own seed, make their apples into cider, thence into vinegar and save their seed for roots for root-grafting, and then the short root and long cion would place us a long step in the advance toward a tree hardy in root and top. While all roots from such seed might not be hardy, I am fain to believe that a large part of them would have a strong tendency to hardiness and would aid materially in resisting our hard winters under hard conditions. I believe that the patrons could better afford to pay one dollar a piece for such trees than to plant the others as a free gift. Just one word about setting of the same. Dig a large deep hole, let it be five or six feet across. Set your tree at least one foot deeper than in the nursery but do not fill the hole nearer than six inches of the top, thus covering your roots six inches deeper than originally and leaving this hole to catch and retain all the water that falls about the tree.

In conclusion, let me request that no one allow last or this winter to discourage him but keep setting, and in the end all that so persevere will come out victorious.

GOOD VARIETIES OF FRUIT FOR THE FARMER.

E. F. PECK, AUSTIN.

(Read before the So. Minn. Hort. Society.)

Mr. President: There's nothing too good for the farmer. And the best of everything is within his grasp if he will but make the effort. He possesses the soil by right of inheritance and is master of all its manifold possibilities.

Moses, in his description of the garden of Eden, evidently had in mind a fruit garden: "And the Lord God planted a garden eastward in Eden, and there he put the man he had made. And out of the ground made the Lord God to grow everything that is pleasant to the eye and good for food. And the Lord God took the man he had made, and put him in the garden to dress and to keep it."

Mr. President, that's scripture, and Moses is all the proof I want that an all-wise God, the Creator of all things, chose horticulture to be the occupation of the man he had made in his own image. "And the Lord God planted a garden," "and out of the ground," "made to grow everything that is pleasant to the eye and good for food." Surely, "Good varieties of fruit for the farmer."

If you will still further search the scripture, Mr. President, you will find the Lord did all this for the man He made to dress and keep His farm, before He created for him a cook and housekeeper.

Whether the Lord considered a good variety of fruit the most essential to the man's happiness, or, whether, in His wisdom He knew that without these things the woman would be discontented, dissatisfied, homesick and feel like jumping the job, I have not yet fully settled in my mind. But, I will venture this: The Lord knows that every farmer ought to raise small fruit enough to supply his family's needs, and also that every farmer might be a successful fruit grower to some extent.

E. P. Roe, in his instructive book "Success with Small Fruits," well says: "Life at the farm sinks into deep ruts, and becomes very plodding. It is corn, potatoes, wheat, butter, milk. The staple productions absorb all thought, and all else is neglected. Nature demands that the young shall have variety, and she furnishes it in abundance. The farmer too often ignores nature and the cravings of youth, and insists on the heavy monotonous work of his specialty early and late, the year round, and then wonders why in his declining years there are no strong young hands to lighten his toil. The boy, who might have lived a sturdy, healthful, independent life among his native hills, is a bleached, sallow youth, measuring calico and ribbons behind the counter; the girl who might have lived the contented mistress of a vine-covered, tree-shadowed home in the country, has disappeared under much darker shadows in town. But for their early home life, so meager and devoid of interest, they might have breathed pure air all their lives."

A good variety of fruit is especially valuable in forming strong, vigorous and healthful bodies in children.

The great Dr. Samuel Johnson once said, "If it is possible have a good orchard. I once knew a clergyman with an exceedingly small salary, who brought up a large family of children very creditably on apple dumplings." Just imagine the possibilities of a good variety of small fruit.

A little wholesome scolding, administered in the right spirit, bends many a twig in the way it should grow. Sometimes, even after the twig has attained the proportions of a mature tree, a more perfect fruit may be grafted. A little scolding for the mature twig may be the means of grafting a better fruit in time to come.

I have said that every farmer might be a successful fruit grower to some extent. But I am very sorry to say that there are some who are inclined no farther in that direction than restriction to a few sickly hills of rhubarb, which product the wife, poor, starved soul, yearning for variety, will exchange with her equally unfortunate neighbor for the promise of a sunburned pumpkin for pies later on.

But such instances are rare and are brought about more through good natured shiftlessness than malicious meanness on the part of the perpetrator.

A well known writer has said, "A farm without a fruit-garden may justly be regarded as a proof of a low state of civilization of the farmer. No country home need be without such simple means of health and happiness."

It affords me the greatest of pleasure to be able at this time to say that circumstances have placed me in a position where I can be more charitable. I wouldn't say that of any man, especially if he came to my grounds and bought berries by the bushel, as many of Mower county's most enterprising and prosperous farmers did last season, and I am not going to say that it is not a very good way for them to get good varieties of fruit—they know their business, and I will try to attend to mine. But the great mass of farmers, are not conveniently located near the grounds of a person who is making a specialty of growing fruit for market.

I now come up to what appears to be the point at issue. How can the farmer procure good varieties of fruit in season and out of season?

The only correct solution to this problem is through the avenue of home production. In no other way can anything but a quality diminutive in comparison be attained. Why? Now follow me carefully. There is no variety of fruit—vinous or vegetable—which unless it is hermetically sealed the instant it is removed from the parent stem does not deteriorate in appearance, quality and value, according to the period of time which may have elapsed since such removal.

I found a great many people last strawberry harvest that knew this, and they didn't get their knowledge from the grower who shipped his product one hundred miles or more to market or from the grocer who handled it. No! While all kinds of berries may suit some people, some kinds of berries wont suit all people. The farmer has a right to be particular what he eats and what his family eats, because he can afford to be. Yes. But what is a good variety of fruit for the farmer to raise? I answer, such a variety as will supply his table with fresh fruit every day in the year. He may have rhubarb or pieplant the first of May, which with proper culture will last for months. Strawberries will come the forepart of June, and last four weeks or more. Strawberries are most every one's favorite. An eminent divine is credited with saying: "No doubt God could have made a better fruit than the strawberry, but He never did." In my opinion the strawberries have done more to christianize the world than any other fruit. They have built more churches, paid more preachers' salaries, sent more missionaries to the field, than all other fruits combined, and never caused the fall of man.

Before strawberries are gone raspberries will be ripe and continue from four to six weeks. Cherries, currants and gooseberries will come before the raspberries are gone. As the last of these go, plums and apples will be ready for the can and table. During August, September and October, the orchard and the garden will furnish a great variety, for who will ignore the luscious tomato, and the juicy, fragrant ground cherry, which you can safely store away in the husk, in a cool, dry place, and keep, if you wish, till March. Aside from this, you will have to depend mainly upon apples, but of good apples the family will never tire.

The only exception that can be taken to this "variety" is the apple. I will admit that as yet this part of southern Minnesota is not particularly adapted to the growing of winter apples. Or, rather, as yet, no variety of long keeping winter apple has adapted itself to this part of southern Minnesota. But, the exhibition of varieties of apples so conspicuous here today is conclusive evidence that there are many apples that do grow and thrive right here extremely well.

I have not the authority to say that any of them would keep under conditions they might have to face in the farmer's loft or cellar, such as sudden change of temperature, children, city company, etc., until rhubarb put in its appearance; but I will say that we all know that there are some kinds that will succeed with half a chance, and furnish a surplus of choice fall and early winter fruit, which surplus can easily be disposed of, when at its best, for enough to place a few barrels of long keepers where they will do the most good.

That's the way I raised my winter apples in Wisconsin, and I did it from five trees of Duchess of Oldenberg. Any man that owns his farm can do it just as easy as he can change a load of hogs into a bank check, a load of wheat into a tax receipt, or a load of scabby potatoes into a big drunk and a family disturbance. See! Simply an exchange of commodities! That settles that.

I have often been asked, "What varieties of berries would you advise the farmer to raise?"—and a very important question too. I am not looking for any argument with any of the nurserymen here or any market gardener, or even with the good people who have builded their homes in the city and are justly entitled to all the respect that can be shown them and their opinion (we as farmers depend on them as consumers), for sometimes people are not strictly honest, sometimes people from necessity are biased in their conclusions, and sometimes are not in a position to properly judge which are the best.

The nurseryman has had his agents out for the past three months, soliciting orders for nursery stock from the farmers, under instructions to speak very highly of the different varieties, not too highly, but just highly enough to make a sale—but especially to recommend anything with which the nursery may be overstocked. The market gardener recommends such varieties as he has. He never plays into the hand of the nurseryman unless he is paid for it, and the varieties most popular with him are those which, by reason of their firmness, can be hauled all over the town, in the market wagon, or, perhaps, shipped a long distance and still present to the uninformed a fairly respectable appearance.

Many of our city friends buy mostly at the grocers and live and die in blissful ignorance of the fact that the fruit at home in the country and the

grocers' stock are as different in every way as—comparison is impossible. When I think of it discouraged fancy drops her pencil at once and says its no use. Oh, Adam! the people that dwell together in cities, how are they punished for thy transgressions!

The most attractive berry by reason of size or color, or the firmest berry, is not the best by any means. There are many kinds that will give the farmer much better satisfaction. The variety that yields well, is healthy and gives a berry whose flavor nearest approaches that of the wild berry of the meadow or the woodland, is the best one for the farmer to plant for family use. There are many such. But I will not go into a discussion of varieties, for the reason that I have found that what does well with me may not be satisfactory with my neighbor, where soil and conditions are slightly different; and kinds that succeed best with my neighbor have failed entirely on my grounds. So it only remains for the farmer to make his selection of varieties and give them a fair test. He will then be in a position to know what he wants for permanent and more liberal planting.

Strawberries and raspberries bear in abundance the second year after planting; blackberries, grapes, currants and gooseberries the third year; plums and the early bearing varieties of apples the fourth and fifth year.

This topic of "Good Varieties of Fruit for the Farmer" I have found propounds more questions than can be satisfactorily answered in one meeting, and I will leave the subject for some time in the future.

I must say in conclusion, every farmer who owns his farm owes it to his wife and to his children—who don't get to town every rainy day—to plant—in this year of our Lord—a fruit garden. To plant in it many of those things that are "pleasant to the eye," and especially plant liberally of those things that are "good for food."

There is no excuse—that common sense or reason will accept—for the farmer buying grocery vegetables and canned fruit when a garden of fair size, laid out in long rows that can be easily worked with a horse, will furnish luxuries for the table every day in the year from spring till spring again.

The sorriest sight to my mind that imagination could picture is a farmer coming to town to sell his butter and eggs and take home a few heads of wilted cabbage and some green peas that have had the goodness all fried out of them by lying all day in the sun at the grocers, and, perhaps, a case of sour, mouldy strawberries from Sparta, as a treat for his wife. Treat indeed! Such treatment is a downright insult and beneath the dignity of a good citizen. A billy-goat would turn up his nose in disgust at the whole outfit. Why, Mister President, he can raise enough of vegetables and fruit on a small piece of ground in one-tenth the time he takes to talk politics up town in the saloon and grocery and never win an argument. Such a garden would not only add to the selling value of the farm but would increase the attachment of the owner and his family to their own premises. It would make the present more enjoyable, the future would look far brighter, and, as the years go by, he could view the past with a great deal more of satisfaction and a great deal less of regret.

WHY WE SHOULD EXTEND OUR FOREST RESERVES.

Col. John S. Cooper, of Chicago, one of our foremost champions of forest protection and extension, in a paper presented before the last annual meeting of the Minnesota State Forestry Association, outlines the situation in the following very able manner:

"What shall be the future of the human race, of our human race in America, with all its accumulating wealth, luxury, refinement and culture, is a question serious enough to tax all the philosophy and patriotism of the wisest and most thoughtful of our citizens. Are we to go the way of all the nations of the antique world? Are we, later on, to begin to show the same evidences of degeneration and decay, already so painfully evident amongst what are called the Latin nations? Or shall we, like the people of England and northern Europe, prove ourselves for centuries to come superior to the enervating influences of wealth, luxury and a refined civilization? In my judgment, that almost wholly depends upon whether we shall, as a people, lose our love for nature and nature's God. Did any one ever know a cynical voluptuary who had a deep love for forests and streams? No, and the reason is plain: the two things do not go together. Go amongst the people from our cities and towns in their annual outings, away out in the few wild regions (which may claim title to wilderness) we have left; see them about their campfires with their rods and guns, and try to find me a corruptionist, a railroad wrecker, a criminal, a bad man, at war with God, society and his own soul, and you will have discovered what I have not been able to in an experience of a quarter of a century amongst the camps of fishermen and sportsmen in the woods and waters of America.

"It is not contended that we should maintain and enlarge our forests for that class of our population. We build penitentaries for them. But in behalf of that large class of our people who love nature, who count it as a step Heavenward when they can commune with her in the deep solitudes of her forests and on the bosom of her peaceful waters, we ask for the preservation of our remaining forests. Sentimental, says the highly practical person. Yes, but so is love; so is art; so is beauty; so is poetry; so is religion; so is heaven; so is God; and thank God, so is the human soul. Burke in substance says, somewhere, that in order for one to love one's country, one's country should be lovely, and that implies physical beauty as well as moral and political.

"The forests are nature's beautiful garments. Stripped of them, she becomes to her lovers as unsightly as Noah did, on a certain occasion, to his family.

"So, if the practical person wants a solid, practical reason for conserving our forests, he has it in the fact that it encourages patriotism. Suppose this whole country of ours were in the same situation as great regions in the central northern parts of your state, where all the merchantable and (what used to be considered) unmerchantable pine has been cut in accordance with that fine old practice of our lumbermen—'Let the tail go with the hide;' where forest fires have come along and burned up the entrails; where all there is left are the uncanny skulls and protruding ribs, in the shape of blackened stumps and deadened trees. Is any one optimist enough to believe that any great amount of American brains, blood and treasure would be at hand for sacrifice upon the altar of patriotism for such a country as that?

"And that leads me to say in concluding this hasty note, that you good people of Minnesota have within your own present power this very winter, an opportunity to preserve and reclaim for your own state and its people, now living and to come hereafter, the grandest region of forests, lakes, rivers and streams (considering its accessibility, and inutility for other practical purposes) to be found in our country. And all you need to do to accomplish it is to make your wishes known to your representatives in the national congress.

"If the Minnesota delegation in congress this winter shall unanimously ask that the federal government set apart as a national park, or forest reserve, what are known as the Chippewa Reservations around Leech, Cass and Winnebigoshish lakes, (comprising some 830,000 acres, of which more than one-quarter is covered by the lakes, rivers and streams), you will have the nucleus in your own state of what is destined to become the grandest forest reserve for the plain people of America to be found within our borders; and you will have it established, too, before the next century is three months old."

OUR DEFORESTED ACRES AND THEIR PROBABILITIES

C. A. SCHENCK, PH. D., BILTMORE, N. C.

Political economy seems to be a study to which our average congressman does not devote much time. One of the foremost laws of political economy neglected by our legislators demands: "Husband all resources of the country, all production being stopped when they cease"— and produce we must, if we want to live.

Originally all products are taken from the soil, gold, iron and coal, wheat, corn, cotton, meat, timber in all its forms, etc., etc. It is the soil, therefore, the productiveness of which must be maintained.

I do not intend to speak of the gradual exhaustion brought about by our present agricultural systems. We shall adopt the soil fertilizing methods of Europe as soon as we shall be compelled to do so, not earlier, and perhaps it is economically wise to so proceed. The fact that millions of acres lie idle in the northwest and in the south which once were productive—productive of timber—is the point I am driving at. Here we have to deal with a national calamity. Every acre of deforested land can annually produce from 150 to 300 feet b. m. of timber, worth from 15 cents to 60 cents. The harvest and conversion of the timber into commodities would, per acre per annum, put from $1.50 to $6.00 into the pocket of the wage earner. As the matter lies, we lose a big resource and a chance to earn wages on it. Whose fault is it this wastefulness, this destruction, this economic sin? Certainly not the wood owners! He would much rather stick to the land and raise a second crop, if such continuation of the forest would pay as well or better than forest destruction.

As a matter of fact, forest destruction pays best, and for that reason the business man practices forest destruction. He cannot change economic conditions. It is beyond his power to make conservative use of his land more remunerative than forest destruction. The people can, but the people do not care to bring about the change. The people know that forestry is a most desirable undertaking, but they do not care to make it a remunerative undertaking and, therefore, will never have it until, as Governor

Lind justly says, until the last tree has gone. Then the people will be confronted by gigantic ruin and by the gigantic task to have new life rise from the destruction.

Forestry on a small scale does not pay. It must be done on a large scale in order to reimburse the expense of administration and superintendance.

Expense, per acre, for reforestation with pine, $10.00, accumulating in 60 years, at 3 per cent to.....$58.90
Taxes and protection, per annum, $.05, accumulating in 60 years at 3 per cent to..... 8.15

Total accrued expense.....$67.05

If the value of the timber raised in the course of 60 years is $67.05, then the people have made 3 per cent on their investment, the land is restored to productiveness, and the $67.05 worth of stumpage can be converted by the wage earner into, say, $670.50 worth of commodities.

I think few people have ever seen white pine or spruce forests raised artificially, by planting seed or seedlings. I have seen them, at Frankford, at Lindenfels and all over Saxony, Wurtemberg, etc., etc. Whosoever cares to see them, should take a trip through Austria's and Germany's forests. We shall see that artificial forests are more densely stocked and contain a higher quality of timber than natural forests. We shall see that reforestation of cut-over lands is a remunerative investment.

LANDSCAPE ART AND THE RAILROAD STATION.

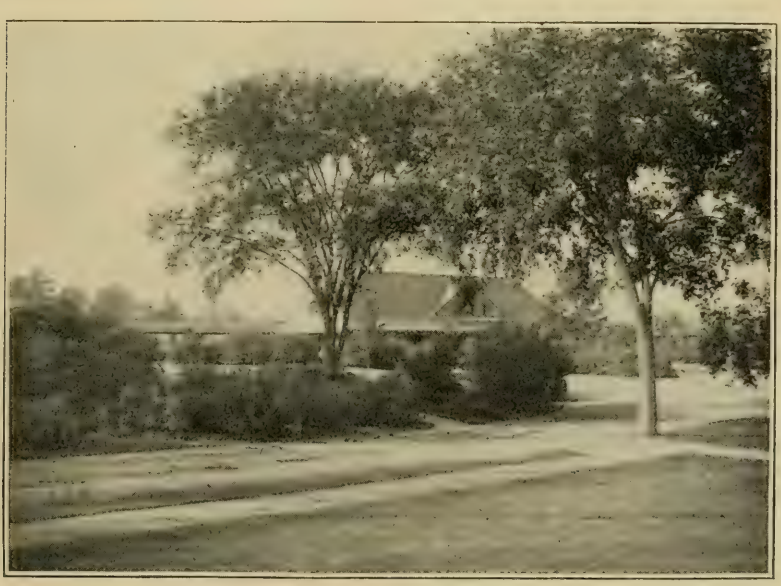
PROF. S. B. GREEN, MINN. STATE EXPERIMENT STATION.

Shakespeare says that "the apparel oft proclaims the man," and while there are many exceptions to this yet in a general way it is very true. In the same way railway stations in some sections of our country may often be taken as an index of the character of the people of their locality. In Massachusetts and some of the other eastern states some of the railroads pay especial attention to making their railway stations and grounds ornamental, in the belief that it appeals to a certain longing for the beautiful in their patrons and to a superior class of people. Perhaps no railroad in the world is more remarkable for this feature than the Boston & Albany Railroad, in Massachusetts. This road employs a skilled gardener to have general oversight of the grounds about its railway stations and many men to attend to the details, and when a new station is located it is not merely the matter of convenience of location which is considered but also the opportunity of making its surroundings attractive, and the architecture and plantings are made to form one harmonious whole. It would be difficult to accomplish this were the freight stations and the passenger stations in the

same building, but generally the freight station is some little distance from the passenger station, and, while they are ornamented

No. 1. Station at Wellsley Hills, Mass.

to some extent, yet not with the attention that is paid to the passenger station.



No. 2. Station at Wellsley, Mass.

Figure No. 1 shows the station at Wellsley Hills, Mass. Figure No. 2 shows the station at Wellsley, Mass. These are very good types of the style of station used in that section, but there are many others just as good. I believe that the people of Minnesota love the beautiful as much as those of Massachusetts and that with the increase of wealth and opportunity for culture will come better and prettier villages, towns and cities, and with them all much more tasty railroad stations. It often happens that the beautiful can be secured by a little forethought without additional expense, and it has a commercial value that is often underestimated.

NEW WISCONSIN SEEDLINGS,

THE ROXANE, WINDORF, AND PHOENIX NO. 50.

A. J. PHILIPS, WEST SALEM, WIS.

The Roxane is a seedling to which my attention was called by a lady in Monroe country, Wisconsin. It was then bearing its fourth annual crop, and then ten or twelve years old. She furnished me with one-half bushel of the most beautiful red apples I ever saw, which I took with me and placed in the exhibition at Omaha, in 1898. They attracted much attention on account of their beauty, and I had many calls there for cions. On examination and from what I could learn, the tree is a sprout from a seedling root of an old Tallman Sweet. Thinking this tree might be valuable I obtained control of it, and that fall I cut cions enough to top-graft four Virginia Crab trees and to grow sixty root-grafts. The grafts nearly every one grew and look very promising. So far I have distributed no cions as it has not been sufficiently tested as to quality and hardiness to be recommended, but bearing a fair crop last season after the cold of February, 1899, speaks well for its hardiness. I hope by next winter at the annual meetings to be able to cast it to one side or to offer terms on which it will be disseminated to the public. I now think it promising. It kept until February.

The Windorf, named for Albert Windorf, of Marathon county, who raised it from seed planted by him of the Northern Spy. It has quite a local value, being spoken of by his neighbors, who say it keeps until Easter Sunday. The tree appears quite hardy and in habit much resembles the McMahon. The fruit is yellow when ripe and in shape somewhat resembles the Tallman Sweet. Mr. Windorf, wishing it tested, gave me a few cions. I top-grafted one tree in the trial orchard at Wausau and three at home. They all grew satisfactorily. Last fall I secured what cions there were on the tree and have them root-grafted. This is all it has been disseminated, and it is still under Mr. Windorf's control and will be offered to the public when the time comes, as he may direct. If found valuable for other places he should reap some benefit for his work, originating as far north as Township 29.

The Phoenix No. 50. Of its origin, I can learn nothing definite of Mr. Phoenix, who sent cions of it, with others, to Professor Dartt, of the Minnesota tree station for trial. It appears to be a russet seedling and a winter

apple and has been pronounced by Mr. Dartt as one of the most promising in his list, and he has a good lot to pick from. My friend, G. J. Kellogg, on examining it at Mr. Dartt's, became interested in it and secured some cions. On his way home he visited me and was liberal enough to divide, so that I have two trees top-worked of it, which grew so nice last season than on my visit to Mr. Dartt in December, 1899, I secured some more cions of which I made root-grafts. It certainly is a fine tree, and I am anxious to know more of it. I talked with Mr. Phoenix last fall about it, but he could give me nothing definite about its history. At present I know of no young trees of it for sale and know of no restrictions on it. This is the history of the new winter apples to date.

MY EXPERIENCE IN GROWING ORNAMENTAL SHRUBS.

H. D. WALRATH, WATERTOWN, S. D.

(Read before S. D. State Horticultural Society, Jan. 17, 1900.)

My experience with ornamental shrubs and trees dates back to 1880. Coming to Dakota that year for the purpose of hewing out a new home, and having lived the greater part of my life in New York state on a farm where we farmer boys, instead of having to bother our heads with the growing of shrubs and trees, were compelled to bring into action all our muscle and energy, not to nurture, but to destroy that which God had planted to beautify mother earth.

When I landed on the western prairies, can it be wondered at that I felt lost when looking upon this broad expanse of fertile land with scarcely a tree, shrub or bush to relieve the eye? I then began to repent for all the destruction I had caused in former years, and realizing that no home could be complete without the very thing I had been taught to kill I immediately commenced to plant and am still in the planting business. Had I known what to plant, how and when to plant then as well as I do now, I would today have a much prettier home; in fact I was what might properly be termed a "green-horn" and had to be guided by the advice of the agents of eastern and southern nurseries, who dazzled my eyes and puzzled my brain with their highly colored plates of everything that was beautiful—trees laden with luscious fruit, shrubs covered with pretty fragrant flowers, just the thing I wanted, and all perfectly hardy (so they said).

Being anxious for all these, I was only waiting the opportunity for the fellow to come along who knew just what I must have, and my first order ran about as follows: althaea, almond, barberry, red dogwood, tamarix, tree paeony, etc., and in order to keep in mind past recollections, I added to these the old fashioned purple lilac, snowball and honeysuckle, which I thought I could find room for somewhere in the background.

The order, of course, was filled with neatness and dispatch, planted with unusual care, watered, cultivated and watched with great interest, only to see the most of them "pass away" without a struggle. It was then I began to appreciate the old friends, as the old fashioned ones which were ordered to fill the back ground survived and have gradually taken the place of the new "high toned ones" and are there to stay in all their splendor and loveliness. I have now growing and in perfect health, the purple, white and Persian lilac, snowball, upright honeysuckle, spiræa Van Houttii, Siberian pea, Missouri flowering currant, Juneberry, Russian olive, Japan rose and

hydrangea. These varieties I would advise planting in the northern half of our state if we wish to be rewarded for our labor.

There may be some objection to the lilac on account of its spreading over the ground by sprouts coming up from the roots, but if care be taken in the pruning of the mother bush, and cutting off below the ground the sprouts when they first appear, we can have as shapely a shrub as from any other variety and one that will withstand the dry or wet weather, the cold or hot winds with impunity. The next in hardiness I would advise the Russian olive (Elæagnus angustifolia). This may be trained in the form of a tree or shrub. I have on my grounds some of each form, and some of the trees are now ten or twelve feet high. Its leaves appear quite late in the spring, thereby escaping the late frost, and in the month of June it furnishes a profusion of small yellow flowers a color like that of a ripe apricot, and after sunset they fill the air with this delicious odor. It is about the last to shed its foliage, and yet its wood ripens to the tip ends of the branches; it is perfectly hardy in this climate, and as yet I have seen no enemies attack it. Next to this I would take the snowball, which, like the lilac, can be trained and pruned so as to attain a height of eight or ten feet and still have a robust, stocky appearance. As to the balance of my list, viz: the Missouri currant, Juneberry, red dogwood, Siberian pea, Japan rose (rosa-rugosa) and hydrangea, I would recommend them with reference to their hardiness in the order above named.

I have had good success with all except, perhaps, the hydrangea. It has a beautiful flower but blossoms so late in the season that the early frost deprives us of all its beauty. My shrubs all grow in a lawn of thick Kentucky blue grass, but I strive to subdue the grass and weeds around their bodies by hoeing up to the middle of July, and then I mulch them lightly with the grass I cut from the lawn, and remove it in the spring. Ornamental shrubs, as a rule, do not afford much shade, and this may be an objection to their more extensive planting in this treeless country, but, in my estimation, no lawn is complete, let it be ever so well shaded, unless it has here and there planted, either by themselves or in clumps, some of our beautiful shrubs.

MELON CULTURE.

C. E. FITCH, ALWILDA, S. D.

(Read before S. D. State Horticultural Society, January 17, 1900.)

In compliance with a letter from the secretary, asking for a paper on "melon culture," I will give you the method pursued last season.

The site selected was rather heavy, black soil, sloping gently to the south and protected by quite a high ridge and the farm buildings. During the winter and spring the ground was manured and not plowed until time to plant, to give the weeds a chance to start. After plowing the ground as deeply as possible, it was thoroughly harrowed, planked and then marked out in rows three feet eight inches each way. In planting, a hill, level with the surface, was made at every intersection north and south and every other row east and west. As soon as the plants were up they were hoed in the hill, drawing the dirt well up among the plants. The cultivating was done with a two-horse corn plow until the vines commenced to run; after this stray weeds were cut with the hoe.

In this way, an abundance of both water and musk melons were raised, although no rain fell after the 20th of June, until most of the melons were ripe and gone in September.

The severe drouth made musk melons of fine quality, and some of them were of large size—one weighed 19 pounds and was 14½ in diameter, the long way, with flesh 2¾ inches thick. The watermelons were of medium size and most of them of fine quality.

For the central and north part of the state early varieties should be selected, and with good culture success is almost certain.

FRUIT CULTURE IN THE BLACK HILLS.

PROF. FAYETTE L. COOK, SPEARFISH, S. D.

(Read before South Dakota State Horticultural Society at Parker, January 18, 1900.)

Fruit culture is still in its infancy in the Black Hills, but enough has been done to prove that nearly all varieties of hardy northern fruits do exceptionally well here. The climate is milder than in corresponding latitudes farther east. A temperature of twenty-five degrees below zero is almost unknown even here in the northern extremity of the Hills. In consequence of the milder climate, apple trees make a smoother, healthier growth than in any part of Minnesota or eastern South Dakota or even, perhaps, northern Iowa.

The great drawback is lack of water. There is a good deal of rain, but it is unevenly distributed through the season and, owing to the high altitude, evaporates so rapidly that a much greater quantity is required to produce a given effect than in the lower altitudes farther east. I have no faith in fruit growing of any kind here without irrigation, and the irrigated districts here are quite limited in extent. Many fruit trees died last winter, but observation convinces me that this does not occur where trees can be irrigated and irrigation is conducted with good judgment. Irrigation must not be continued too late, and, more important still, the ground should receive a thorough soaking just before winter closes in.

Thousands of apple trees have been set during the last three years, but there are few bearing trees in the Hills. Fortunately, half a dozen pioneers —notably Messrs. Thompson, of Rapid City; Geo. M. Trimmer, of Hot Springs; and Wells and Dorset, of Spearfish, began, from fifteen to twenty years ago, costly and intelligent experiments in apple growing, that have been continued to the present time and have thrown much light on the subject.

It seems pretty well settled through the experiments of these men that the hardy summer, fall and early winter varieties, such as Tetofsky, Yellow Transparent, Oldenburg, Alexander, Wealthy, McIntosh Red and Longfield, may be confidently relied upon to live and grow, and to produce large crops of fruit of superior quality. McIntosh Red is deservedly popular in this neighborhood. It is one of the best members of the valuable Fameuse family, apparently about as hardy as the Wealthy, and an annual bearer. On the whole I believe the Wealthy to be the most profitable variety that has been well tested. It bears an enormous crop—in fact, overbears—every alternate year. The Longfield is a very early bearer and yields immensely.

Blight is almost unknown in the Hills. The Transcendent crab, which is worthless in most localities on account of blight, is valuable here. Yellow Transparent, which gives so much trouble in this respect in many localities, seems to be blight-proof here.

I cannot speak for the southern Hills, but in the northern Hills no long keeping apples have proven satisfactory. The Ben Davis, Walbridge and a few others have been fruited, but the nights are too cool and the seasons too short for the full maturity every year of, usually, either tree or fruit. Our experience has been inadequate. We are still living in hope, however. When the multitude of young trees come into bearing, we may expect to know more about such matters.

Crabs do extremely well. Taking one year with another, the Whitney No. 20 crab has, I judge, proven to be the most prolific tree fruited in the Hills.

Hardly anything has been done with pears. In the southern Hills a very few have been set long enough to come into bearing and are doing well. Mr. Wells, in this neighborhood, has a few Russian pears in bearing.

Trees set two or three years in the Hills have made a very healthy growth everywhere. This leads us to hope that this fruit will be a success here. I have ventured to set 150 trees—Bartlett, Clapp's Favorite, Flemish Beauty, Kieffer, Anjou, Idaho and Russian.

The little that has been done with cherries seems to indicate that the climate is not adapted to the best known Dukes and Morrellos, at least. In this neighborhood they do not grow thriftily and gradually die out. I have about thirty young Russian cherry trees, set three years, that appear healthy.

Wild plums are very thrifty and productive. Not much has been done with cultivated varieties, but yet enough to render it reasonable that the varieties of Prunus Americana at least will be a marked success. I have Wyant, Wolf, DeSoto, Cheney, Rollingstone, Hawkeye, Aitkin, Surprise, Tatge, Milton, Communia and others, just beginning to bear. They promise well. The Wyant did the best the past season, but trees are too young for reliable comparisons.

For twenty years past beds of strawberries have been grown here and there through the Hills. They have done so well as to prove that this luscious fruit is perfectly at home in the entire region.

Beginning seven years ago I have tested thoroughly on my soil the leading sorts, at least seventy-five in all.

The pistillate variety, Warfield, fertilized with the Bederwood, has been among the most productive and profitable. The Clyde, Splendid, Manwell, Glen Mary, Woolverton, and Brandywine have done exceedingly well for me. I shall set more largely of the Clyde than anything else the coming spring.

Red raspberries yield as well here as in any part of the world that I am acquainted with, but they need winter protection to insure a crop, and that is expensive.

I have tested all varieties of note, and find the Loudon and the Marlboro far superior to all others. My experience elsewhere had led me to suppose that the Cuthbert (Queen of the Market) would rank high, but it is worthless with me.

I shipped several crates of Loudon raspberries in September this year It is easily the king of the reds.

The purple raspberries, Shaffer's Colossal and Columbian, are hardy and productive. The former is of better flavor, but the latter is larger and firmer. In common with other raspberries and with blackberries, they must be protected in winter to make a crop at all certain.

Blackcaps are not so much at home as the reds. They yield moderate crops of large berries. I have tested about all of them. The Mohler (Eureka) is decidedly the best early sort. The Kansas and the Munger are good later ones. The Older is too soft and sour.

Blackberries are not an entire success, though I have had several hundred quarts a year for three years past. After testing the standard sorts, I have discarded all of them except the Ancient Briton. There is something in the climate, the altitude and the hot, July winds, perhaps, that causes them to blight, the Ancient Briton not so much so as the others.

For three years I have been experimenting with the Rathbun, a cross between the upright blackberry and the trailing dewberry. It seems promising, and I am hoping it will prove productive and not blight.

For several years I have been experimenting with the Lucretia dewberry. My success has been varied. Two years ago I picked 120 quarts from 20 hills and sold them for $30. This year I have 500 hills in bearing, but do not feel altogether sanguine as to the outcome.

If there is any region where currants yield more bountifully and grow more thriftily than here I have not seen it.

Four years ago I resolved to test for this climate the leading varieties. I spared no pains nor expense in getting everything true to name. I have hundreds of plants, but as several sorts have been set only two years it is too soon to speak positively of results.

The Victoria is quite a disappointment in both size and results. The North Star is the smallest currant of all, but the bush is the largest of all. The Fay surpasses everything in size, but I cannot yet speak positively of its productiveness. Red Cross, Wilder, Pomona, Knight's Prolific and Prince Albert promise well. The London Market has been the greatest surprise so far. It is among the largest, is brilliant red and very productive.

Mr. Thompson, of Rapid City, has been a large grower of Houghton seedling. He considers it the most profitable gooseberry for the Hills, and certainly he has grown immense crops. I am, however, trying some experiments in the hope of finding something better. I can only say at present that the Downing, of which I expected much, and the Pearl have, so far, done poorly, while the Red Jacket has borne large crops of fine berries, and the Columbus and Chautauqua seem promising.

Within a dozen years the Black Hills will probably be the leading fruit growing region in the state. All the fruits mentioned in this paper will doubtless be grown in profusion on the irrigated lands, and the markets here will be fully supplied with our own production of northern fruits.

STORING DAHLIA BULBS—After the first frost has killed the tops and before there is severe freezing, dig up the bulbs, shake off the adhering earth and store them in a room free from frost. A cellar or pit which will keep Irish potatoes will answer nicely for dahlias. It is best to leave them in the open ground as long as possible in order that the growth may become thoroughly matured.

SPRAYING FRUIT TREES.

(Edited by Eugene Secor, Forest City, Ia., and published by the National Bee-Keeper's Association.)

The subject of spraying has become so important, in view of increasing insect enemies, that some of the latest recommendations, by persons who have given the matter study and practical experiment, are appended. The most of these experiments have been conducted by men trained to the habit of close observation. They were also conducted solely in the interest of truth and the public good.

The practice of some unthinking farmers of spraying trees while in full bloom is considered by all horticultural schools and by the government experimenters as useless, if not injurious to the bloom, and harmful to the insects which are valuable assistants in making fruitful orchards.

A spraying calendar published in 1900 by John Craig, Professor of Horticulture at the Iowa Agricultural College, gives very full instructions about spraying to kill the various enemies to fruit and foliage, and he nowhere recommends arsenites or other poisonous mixtures while the trees are in bloom. The following are among the recommendations for coddling moth and bud moth:

Apples.—Bordeaux mixture and Paris green. "Just before blossoms open." "(Important.)"

Same mixture "soon after blossoms fall." "(Important.)"

Pear.—"Bordeaux, just before blossoms open." "(Important.)"

"Bordeaux and Paris green soon after the blossoms fall." "(Important.)"

Plum.—For bud moth and curculio: Copper sulphate and Paris green "before buds open"; Bordeaux and Paris green "soon after blossoms have fallen." "(Important.)"

Other instructions are given, but as it is not intended to give full instructions here, only such quotations are made as apply to the blooming period.

A spraying calendar is also issued by the Ohio Agricultural Experiment Station. Nowhere does it recommend spraying the apple, pear, cherry or plum during the blossoming period.

Professor L. H. Bailey, of Cornell University, says: "The grower himself must decide when and how often to spray, because he should know what enemies he desires to reach. If he has bud moth he should spray with the first swelling of the buds, and if he has plum scale he should spray in the winter. But, leaving the special insects aside, it is safe to say that for the two staple enemies—the apple scab and the codling moth—at least two sprayings should be given. I am not yet convinced that spraying when the tree is dormant has any appreciable effect in destroying the apple scab fungus. As a general statement, I should say spray twice upon apples and pears—once just as the fruit buds break open, but before the flowers expand, and again just as the last blossoms fall. In both cases I should use a combination of Bordeaux mixture and Paris green. The first spraying is for the scab fungus in particular, and for this the Bordeaux is used; but the Paris green will most likely be of service in destroying various leaf eating insects. —Bulletin 101, Cornell University Agricultural Ex. Sta., by L. H. Bailey.

DON'T POISON YOUR FRIENDS.

In case of treatment with the Bordeaux mixture, the spraying is done before the blossoms are opened and, again, later in the season. The spraying while yet in bloom is to be strongly objected to because of its evil effect upon the bees and, again, because there is no use in doing this. As a remedy against blight or other microbe diseases which are destroyed by a solution of the copper salts, it should be applied very early, as soon as the buds begin to swell. It is at this time the disease is most susceptible of treatment. Suppose we wait till later and spray the trees while in bloom, it is probable the treatment is not so effective, and though it might kill the bees, it would not do so immediately, and so would not prevent these insects or any other nectar loving species from visiting other bloom and conveying the germs of this disease. Thus there is no excuse for ever spraying trees with poisonous compounds while the blossoms are yet on the trees.

While discussing this matter of spraying, I wish to express my gratification that all the entomologists have fallen into line and now discourage the use of Paris green and London purple in spraying trees while the blossoms are still hanging. I well remember when I was alone in this position. Years ago I knew of colonies of bees almost depopulated by this arsenic poison. As I have intimated above, the bees were not at once poisoned and so were able to carry the poison to the hive and store it with the honey. This was fed to the brood, and as a result there was great mortality among the brood no less than with the mature bees. It is not strange that the bees are not at once killed. The bees do not sip the nectar from the flowers for their own immediate nourishment but store it in their honey stomach to be conveyed to the hive. Thus little, if any, of this nectar is absorbed in the blood, and so will not poison the bees until fed upon later, after it is digested and changed to honey. It might be argued, with no light force, that trees should never be sprayed with poisons while in bloom, lest persons may be poisoned who may eat the honey. Indeed, I think there would be great danger from this except from the fact that bees gather so little honey from the fruit bloom that it is rarely stored for sale, and only used by the bees. I am not sure that the bees would get enough of the poison to hurt us, even though they did store nectar from the sprayed blossoms in the hive. I have reason to believe that there would not be enough poison in the nectar of the blossoms to do us any perceptible harm; yet I think all of us would prefer our honey with the Paris green left out.

There is another reason why no one should spray their trees while yet in blossom. Such spraying is usually done for the codling moth, and we now know that the eggs are not laid on the fruit until after the blossoms fall, and do not hatch for some days after this. We also know that the wind will remove the poison, and thus to get the best results from spraying we should not spray until about three weeks after the trees begin to bloom, or until the blossoms have all fallen from the trees.

Prof. Waite has performed a most valuable series of experiments, which show conclusively that we can not grow either apples or pears with the best success unless we mix many of the varieties and have the presence of bees to perform the important and often necessary work of cross-pollenization.

There are a few insects—the bud-moths—the larvæ of which feed upon the buds. In cases where these insects are very numerous it may be well to spray with the arsenites. And in case of the presence of either the apple or

pear blight it may also be well to use the Bordeaux mixture. In this case it is found well to combine the two—the arsenites with the Bordeaux mixture. But here again the spraying should antedate the blossoming season, as the bud-eaters are doing their mischief before the bloom opens.

We see, then, that in all cases spraying should be delayed until after the bloom has fallen from the trees, or else performed before the trees blossom, and never be applied while the bloom is on the trees.—Prof. A. J. Cook, of California, in Am. Bee Journal, Sept. 7, 1899, Page 565.

A DANGEROUS PRACTICE.

Spraying fruit trees while in bloom (p. 48), with arsenical mixtures is dangerous and in fair weather is liable to not only kill the bees that frequent the bloom but also to destroy the young brood that are being fed at that time. Spraying should not be done until all the bloom has fallen.—Prof. F. M. Webster, Bulletin 68, Ohio Agr. Exp. Station.

Fruit trees should never be sprayed when in bloom, on account of the liability of poisoning honey-bees or other insects useful as cross fertilizers. —Farmers' Bulletin No. 19. U. S. Dept. Agr., by C. L. Marlott, M. S.

INJURY TO BLOSSOMS.

The trees should not be sprayed while in blossom, for the spray may injure the delicate parts of the flower, and the poison may kill the bees and other insects that play an important part in fertilizing the blossoms.—Bul. No. 86, New Series, N. Y. Agr. Ex. Sta., by S. A. Beach and W. Paddock.

Never spray a fruit tree while it is in bloom. You may injure the delicate stigma and prevent pollination, and there is also danger of killing the bees.—Bul. No. 36, Mo. Agr. Ex. Sta., by I. M. Stedman.

IT SHOULD BE A MISDEMEANOR.

Spraying fruit trees in early spring to prevent the ravages of various insects is becoming very common. Spraying trees while in bloom is very likely to poison the nectar and destroy the honey-bee. This has been done in several cases. Not only have the mature bees been poisoned but the brood has also been destroyed. * * * * * The fact is very apparent that fruit growers are nearly or quite as much interested in the presence of bees as are the bee-keepers, Pomologists then may well join hands with the apiarist in demanding and securing a law making it a grave misdemeanor to spray fruit trees while they are in bloom.—Bul. No. 26, Div. of Entomology, U. S. Dept. of Agr.

RECENT LAWS ON THE SUBJECT OF SPRAYING.

Michigan.—Act of 1895.

Section 1. The People of the state of Michigan enact:

That it shall be the duty of every owner, possessor or occupier of an orchard, nursery or vineyard, or of land where fruit trees or vines are grown within this state, to spray with a poisonous solution or disinfectant and of sufficient strength to destroy such injurious insects or contagious disease, all fruit trees or vines grown on such lands which may be infected with any injurious insect or worms, or infected with any contagious disease known to be injurious to fruit or fruit trees or vines;

Provided, that if such trees or vines are infested with the San Jose or other scale insects, such trees or vines shall be either effectually sprayed or destroyed. Provided also, that no such spraying shall be done while said fruit trees or vines are in blossom, except in case of canker worm.

New York.—Chapter 325, Laws of 1898.

Section 1. Any person who shall spray with, or apply in any way, poison or any poisonous substance to fruit trees while the same are in blossom is guilty of a misdemeanor, punishable by a fine of not less than ten dollars nor more than fifty dollars.

Colorado.—Chapter 55. Laws of 1897.

Sec. 8. It shall be unlawful for any person or persons to spray fruit trees while in bloom with any substance injurious to bees.

Sec. 9. Any person violating any of the provisions of this act shall be guilty of a misdemeanor, and upon conviction thereof shall be punished by imprisonment in the county jail for a period of not less than 10 days nor more than 100 days, or by a fine of not less than $10 nor more than $100. Any justice of the peace or district or county courts of the respective counties shall have jurisdiction to try any case arising under the provisions of this act.

MY HARDY PERENNIAL FLOWER GARDEN.

S. B. SMITH, FORESTON.

This subject is one of deep interest to the feminine portion of the human race, the world over; but those of the masculine gender are supposed to take less interest in such subjects. But there are some exceptions to this rule, and I am one of those exceptions. I have cultivated flowers many years, not with a view of writing about them nor to make them a study, but merely for their beauty and the pleasure they give. I am not a botanist; I am simply an old farmer who takes delight in having a beautiful flower garden. The cultivation of flowers is elevating to man's moral nature; it leads the mind from these beautiful scenes in nature to nature's God, the great Creator. A few years ago at the time of the state fair, I spent two weeks in Minneapolis and St. Paul, and through the kindness of friends I visited many places, and among all the scenes there was nothing that so attracted my attention as the numerous flower gardens.

But I see my mind has been led astray; I have wandered from my subject, which is my perennial flower garden. If you could see my perennial flower garden, you would be as surprised as I am that I was given this subject; nevertheless I have a few perennial flowers, such as is common in most flower gardens, the iris, peonies, perennial phlox, pinks, lilacs and a few rose bushes. I have one rose bush that was sent me by my daughter living near Seattle, Washington. I have given this bush extra care, and I shall expect something beautiful from it by and by, as Washington abounds in roses of great variety of beautiful colors. I have a few wild perennial flowers transplanted into my garden; one that is called honeysuckle here. I think it belongs to the woodbine species. Next summer I will send a sample to a botanist and learn its true name, but it is very beautiful when in blossom, also when the seed gets ripe. It grows from three to four feet high. Another wild flower that I transplanted is the columbine, and to my mind this is one of the most beautiful flowers to be found here. In a wild state it often grows three and sometimes four feet high and is very beautiful.

There are many beautiful wild flowers here; the fields, the meadows, and the woods are one vast flower garden, but it is useless for me to attempt a description of all of them. I will mention only one more, and that is the wake-robin, or trillium. This flower commences to blossom in May and continues in blossom about four weeks; first it is pure white, after a time the blossom turns to a light pink and then to a very dark pink, and these three colors continue as long as the blossoms last. We have many acres of this plant, and there is nothing in the spring time that so delights the eye as the trillium. At the present time these wild flowers are a large part of my perennial flower garden; but I intend to enlarge my cultivated garden as fast as time and circumstances will admit. It is only little more than two years since I came to this country, and the place where I now live was wild land, with neither fence, field or buildings; and the land has never been disturbed by the plowman, and as I have lived nearly seventy-six years, I am too old to bring into cultivation a very large piece of land in two years that is partly covered with timber.

Now, I have told you about my perennial flower garden, but if my subject had been annuals instead of perennials this article would have been more interesting. I said in the former part of this article that I had cultivated flowers for many years, but they were mostly annuals that I cultivated; although I intend to enlarge on perennials, I shall not give up the annuals; it affords me much pleasure to work in my garden of annuals, and I take pride in showing them to visitors. I believe people would be more happy and enjoy life better if they were in the habit of cultivating more flowers to delight the eye and gladden the heart. Let us then give a little time and at least a small piece of ground to the cultivation of flowers.

ASPARAGUS FOR THE MARKET GARDEN.

W. G. BEARDSLY, MINNEAPOLIS.

From three-fours of an acre to an acre of ground makes a good-sized bed of asparagus for the market garden. In setting out a bed of it, choose good ground, and if convenient get a south slope. Having chosen the ground, my plan is to set two-year-old plants four feet apart one way, and two feet and a half the other. Four thousand plants to the acre is a good stand.

For planting mark out the ground in rows four feet apart. Turn a dead furrow for the plants, rake the bottom of the furrow to make a root-bed and lay in the plants the proper distance apart. Hoe a little dirt over them, and the work is almost complete. By cultivation during the summer and fall these furrows are filled up and the roots are covered with a good depth of earth. In order that the ground may not be wholly unproductive to the gardener during the first year, potatoes or small truck may be raised between the rows.

Late in the fall cover the asparagus bed thoroughly with manure. In the spring cultivate and drag it thoroughly. The second year from planting you will have a very good bed for cutting for thirty days, which is about half of an asparagus season. In the immediate vicinity of Minneapolis is a bed of seven-eighths of an acre which produced for its owner early last summer $300 worth of asparagus.

Twenty-five to fifty roots are enough to supply an ordinary family. Seed may be sown, but this is hardly profitable. The plants should be set in one or two rows for convenience in cultivation. In this way a family can have something easily procured, palatable and easy to prepare for the table, for sixty days, and at a time, too, when few vegetables are accessible. If good care is taken of an asparagus bed it will become more productive as it gets older.

Mr. Burnap (Iowa): What do you call late?

Mr. Beardsley: From the first to the 12th of July is our closing season. There are about sixty days for cutting asparagus.

Prof. Waldron (N. D.): I find we can extend the season of cutting by planting at different depths. Some is planted seven inches deep. That planted very deep gives a late cutting, and frequently for the late cutting a higher price is paid than for the earlier cutting, because there is no competition.

USES OF A APPLE SEEDLING.

F. W. KIMBALL, AUSTIN.

In my native state the main use of apple seedlings was to raise apples to make cider of, and they played a good part. With us the use should be, primarily, to test and develop a fruit that may be palatable and a tree that may be hardy and fruitful. If every one taking an interest would plant seed of the best of our home grown apples, I am confident that out of the various trials we would soon produce at least a few varieties that would possess all the needed qualities for this climate, but as the great desideratum is to get a hardy winter apple, and, as a rule, like begets like, we can hardly expect to get a winter apple from the seed of a summer or fall kind. Once in a while nature delights in throwing a sport, but it is so seldom that we need not think of depending on such freaks. Let us get seed of as late varieties as possible, grown in this vicinity, and see if we cannot improve on the parent. I fully believe that our apple of the future is coming from the seed crossed by our intelligent experimenters in a systematic manner. Out of all of the experiments going on we can't fail to soon have candidates for the thousand dollar prize, the offering of which is in my opinion the wisest act ever performed by this society; and the state legislature can well afford to supplement it with a ten thousand dollar premium to the one who wins it. What a stimulus that would give to the planting and rearing of seedlings, and what glorious results would be bound to follow.

In another way the raising of seedlings from home grown seed can be made of great advantage to the state. Could and would all our nurserymen propagate their trees on home grown roots from home grown seed, I am confident that the trees would start out on a root system far more hardy than now obtained from seed raised anywhere but at home. The result in a few years would be to put orcharding in this section a decade ahead, at least. And as like begets like, can there be any question as to this proposition? I think that most, if not all, our nurserymen believe this. Then let us ask them to put it into execution; even if their apples are worth a dollar a bushel, they can better afford to make cider and vinegar and save their seeds to plant than to take foreign seeds as a gift.

THE SIBERIAN PEA-TREE AS A HEDGE.

PROF. N. E. HANSEN, BROOKINGS, SOUTH DAKOTA.

I took this photograph in the fall of 1897, at Uralsk, a town situated on the Ural river (lat. 51°). This river forms part of the boundary between European Russia and Siberia, flows south and empties into the Caspian Sea. The annual rainfall is only 12.6 inches. The photograph shows that this plant (Caragana arborescens) makes a good growth without irrigation in a dry climate. Throughout European Russia it is the favorite ornamental hedge plant for the home grounds. Along the Neva river, front of the Imperial Botanic Gardens, at St. Petersburg, is a pretty hedge of this plant. In the

The Siberian Pea-Tree (Caragana Aborescens) as a Hedge.

government forestry experiment plantations at Uralsk it was largely used as a nurse tree, or, rather, bush, because it endures severe drouth. The forester in charge said the thinnings were good for woven lattice fences and for fuel. The wood is strong and useful for many purposes. For fuel it does not need to be dried, as it burns well when green.

Caragana arborescens has proved perfectly hardy in Minnesota, the Dakotas, Manitoba and Assinaboia. It should soon become common, as the plant seeds young and the seeds germinate readily. Single lawn specimens at the Experiment Station at Indian Head, Assinaboia, grew about twelve feet in six years. The maximum height of the untrimmed Caragana hedges

I observed in Russia was fifteen to twenty feet, but the usual height of the pruned hedges was about one-third of this.

The name "pea tree" refers to the shape of the blossom, which is like that of the pea. The color is yellow. It is a member of the same family (Leguminosae). In May the bush is covered with a profusion of blossoms. The locust-like foliage appears early and is of a lively green color. At Brookings we have an interesting collection of about fifteen species and varieties of Caragana, all of Asiatic or east Russian origin, and all are hardy. Caragana arborescens is the largest. The German name "tree-like pea-bush" defines the size better than the English "pea tree."

In the course of my Russian trip in 1897-98, for the U. S. Department of Agriculture, ten Russian "poods" (a "pood" equals thirty-six pounds avoirdupois) of the Caragana arborescens seed was secured, and this was widely distributed by the Department.

PROSPECTS OF APPLE GROWING IN THE RED RIVER VALLEY.

REV. O. A. TH. SOLEM, HALSTAD.

The Red River Valley is noted for its wheat, so much so that wheat-growing and the Red River Valley have become almost analagous terms. Consequently many people believe that wheat is about the only product that can be raised here with profit. But the Red River Valley has repeatedly proven itself to be a country where other products can be raised just as successfully and with as much profit as wheat, among which may be mentioned clover and other tame grasses, small fruit, etc. It is our hope that apples also can be raised here with profit.

The varieties of apple trees which agents have recommended and sold are not adapted to our climate, and some of them not even to that of southern Minnesota.

Transcendent crab has been commonly recommended, but is inadaptable to us on account of its susceptibility to "blight." However, I believe it can safely be used as stock to top-graft on.

Hibernal, Arctic and Toucan are promising, and so far have exhibited no signs of root-killing.

During latter part of March and April dry south winds prevail here which do greater damage to apple trees than to any other kinds of trees, and I consider protection on the south side of the orchard as absolutely necessary. Protection from the north and west winds is also of great advantage.

After planting them deep, my apple trees seem to do better and have shown no signs of root-killing.

It is well to begin cultivating between the rows as early in the spring as possible and to continue frequently till July, as trees so cultivated will grow rapidly and be ready for the cold weather.

I will not say that the prospects for apple growing in the Red River Valley are the most promising, but I have not as yet much experience. As we have the Northwestern Experiment Station, at Crookston, under such competent management as that of Prof. T. A. Hoverstad, it leads us to expect considerable also in line of apple growing from that source. And then the persevering work which is being done by the Minnesota State Horti-

cultural Society assures us that in the near future we will have new species of apple trees which will be especially adapted to our climate. While waiting for these, we avail ourselves of the most hardy species and such as are least susceptible to blight, and on to these we top-graft other species. Thus we jog along the best we can, and if our expectations are not too great we will no doubt be satisfied with the results.

The President: As Mr. Solem is not here in person, perhaps Mr. Hoverstad can tell us something of the conditions existing in the Red River Valley.

Mr. Hoverstad: I have nothing particular to add to that paper. My experience in apple tree growing in the Red River Valley is very limited, and I have had very few results as yet, excepting dead trees. There were a number of trees planted at the experiment station in Crookston in 1896 and some in 1897, and of those planted in 1896 there are none alive except a Hibernal. Out of the other trees I think I have left one of the Duchess and one of the Wealthy, and those are killed back badly and are not at all promising. The only tree that looks really well is a Patten's Greening. We planted three in 1897; one of them is dead, but the other two look exceptionally well, and this fall they were the best looking trees we have on the ground. They are in an exposed place and receive no protection whatever. We have some low growing green ash and cottonwoods on the south side, but on the north side there is no protection, and they are growing where there is a good deal of alkali in the soil, and where cottonwoods would not grow at all. Down on Mr. Solem's place he has done a great deal of work in growing apple trees, and the Arctic is the one most promising with him. So far the orchard is not old enough to come into bearing, but the trees look very well and have stood the winter in good shape. Last winter, according to the reports of people who spent the winter there, they had a temperature of fifty degrees below. Now if those trees can stand that amount of frost it would certainly seem that they were perfectly hardy. However, there was one thing in their favor, we had a great deal of rain during the fall so that the ground was very wet when it froze up, and that may have helped some, so the test was, perhaps, not so severe as if the soil had been dry. There are so many things to try that we cannot go into apple growing at the present time. The Hyslop and Transcendent have been recommended. We planted six last year, and they all died.

Mr. Dartt: What difference is there in the altitude of the valley, how much higher is the highest land than the lowest land in the valley?

Prof. Hoverstad: There is no difference or very little. There is just a difference of a few feet in the valley from the east to the

west—I mean a few feet to the mile, and from north to south a few inches. The altitude at the station is something like 875 feet above sea level.

Mr. Wheaton: I want to ask the altitude of the Red River Valley above the river?

Prof. Hoverstad: The land is almost perfectly level. I could not tell you what the altitude is, but it is very little above the river.

The President: The difference is very little. A man told me he went one hundred and fifty miles in a freshet right over the land in a boat.

Prof. Green: I would like to have you tell us how wet it is. It seems to me it would be well to have those points brought out.

Mr. Wheaton: I had a little experience in that country twenty-seven years ago running a level. The land near Crookston is about forty feet above the Red Lake river and that is slightly above the Red River, so I think there is a drainage of about forty feet from Crookston.

Mr. Clark: Some five or six years ago I was at Fisher, that is twelve miles from Crookston, and a groceryman at that place had some very fine Transcendent crab apples; said he had bought them of a man living in that vicinity, and that he had brought in about twenty bushels. I would like to know whether Prof. Hoverstadt has ever heard anything about those trees?

Prof. Hoverstadt: I do not know of any trees raised in that part of the country. I have been told that some men are very successful, but when you get at the truth of the story you find their efforts are practically a failure. I have been told that there are Transcendent trees in that part of the state that are successful, but I have never been able to see any. About the fall of the land from Red Lake River to the Red River, I hardly think that can be so. The banks of the river are very much higher than the land either way, so that instead of having drainage from the country into the river we have the drainage from the river into the country. Being situated as we are only two miles from the river I had some experience with drainage. The land north of us is a little higher than the experiment farm, and there is a rise of five or six feet from the experiment farm to the river, so that if we want to drain we have to cut through the ridge, and we have to go quite a good deal deeper when we get to the river. The land north and east, about twenty sections, used to be under water, and that water ran right across the experiment farm, and old farmers told me that in former years they could have run a steamboat right across the present location of the farm. In the spring of '97 the whole farm was under

water; it was all one lake, so that we are laboring under the disadvantage on that farm of having very poor drainage. The soil is a very heavy clay soil without any sand, and in some places there is a good deal of gumbo, and here and there over the farm there is a great deal of alkali; consequently, we have a great deal to contend with in attempting to grow fruit on that particular farm. I frequently get letters from nurserymen all over the country asking me if we cannot try this or that, because if we succeed in growing certain trees they will grow in any part of the country.

Mr. Dartt: It seems to me the most good we can do for the Red River Valley is to decide what place or what particular locality will afford the best location for apple trees. I have an opinion which I will give you, and if it does not meet with the approval of the society I hope they will object to it. My opinion is that if in that locality they will plant a protection on the south side and one on the west side and then plant their trees, starting in to plant them about fifteen or twenty feet from the windbreak on the south and west, put their trees along that windbreak a few rods to the north they will be most likely to be successful. I had trees that succeeded well just a few rods north of the windbreak when a little further north they killed out. This windbreak will be likely to catch the snow and hold it, and moisture is a great protector of trees. If my opinion agrees with the opinion of the society I think we ought to advise the people in charge of that experiment station to set their trees in that way.

Mr. Latham: I have been in correspondence with Mr. Hagan, of Halstad, and he has talked in a very cheerful way of growing apples. He planted his trees so the snow would blow over them, but he has had to contend with a little animal known as the jack rabbit, and fencing was of no avail, as they would even step over a ten-foot fence, and the more snow that drifted in the higher he had to build his fence. He is planning now to roof it. (Laughter.)

CONDITIONS NECESSARY TO THE SUCCESSFUL WINTERING OF A MINNESOTA ORCHARD.

E. H. S. DARTT, OWATONNA.

My theory is that orchards are killed out by drouth, by drying out in summer and freezing dry in winter, and the main thing to have an orchard in good condition is to have moisture. I believe that good cultivation is the best thing in the world to retain moisture in the ground. If any doubt that, let them go into an orchard that is seeded down in dry weather and see if the grass has not pumped the moisture all out of the ground. If you look at an orchard that is well cultivated you will find more moisture; it holds it better. Another point: manuring makes the soil hold moisture

better. Poor land is a great deal more likely to dry out, and the orchard needs the manure to help it hold the moisture, so I would advise thorough cultivation. I would cultivate pretty much during the whole season, and then I would mulch—I do not know that I ought to say heavily, but I have mulched with coarse manure. If you have good manure I would put it on lighter, and those varieties that are likely to blight I would put on a mulch of straw or old hay. I would not put much manure on those varieties, but varieties that are not likely to blight I would manure pretty well. Then I would mulch about three or four inches deep, and I would spread the mulch around the tree three or four feet. I would also protect the trunks of the trees. If I were trying to do it just right, I would protect the bodies of the trees, tying something around. Professor Green spoke of cornstalks; that is good, or this lath protector can be used; but I would protect them clear around the tree. I have protected by tacking boards on the southwest side; that seems to serve the purpose, but sometimes trees die, and I cannot tell what kills them. (Mr. Lord: "Girdling.") (Laughter.) That's right. I would have this protection clear around. Sometimes in the spring, when we have cold weather we have a warm day once in a while, and the sun beats down, and the snow reflects the heat, and it thaws the tree a little distance from the ground. I have seen trees where six inches from the ground the snow remained a certain time and above that for about eight inches it was killed dead and brown, but above that the tree was all right. I think this protection on all sides of the tree would prevent that.

Mr. Philips (Wis.): I understand you have a good bearing orchard north of Owatonna. Now, how many acres are cultivated, how many are mulched and how many trees are protected?

Mr. Dartt: I would say there were perhaps one hundred or a hundred and fifty trees protected with that board protection, but the board frequently gets knocked off in cultivating, and I have not thought enough of that kind of protection to replace it. A year ago last summer the old orchard was thoroughly cultivated, and last year I cultivated it early in the spring, ran a disc harrow through it, but we could not give it so thorough a cultivation because I had so much to do.

Mr. Yahnke: I like Mr. Dartt's speech pretty well, and I am glad he is converted, but I want to convert him a little more. A year ago he would not have any manure in his orchard, but now he allows a little. A year ago I said I manured my orchard, and I manured it frequently, and I told him I should manure it next year. He prophesied that my trees would be all dead this year, but I have every one alive and some more too. (Laughter.) I have three thousand trees on my place (that includes my nursery), and I have had only three trees that blighted this past summer, and they did not have any manure for three summers; that was the Whitney No. 20. Now in regard to what Mr. Dartt says about protecting the trunk of the tree, there is a good deal in it. There is more in

it than most people think. I used tarred paper once, but that is the worst thing one can use to exclude the air. I can tell you one think—he says he protects with boards, but I do not protect with anything; I do in one way, and, that is, I give them low branches. I do not want the trunk higher than two feet before it branches out. When farmers buy trees they want a tree with a nice high trunk, they want them so they can run a horse through the orchard. That is the worst thing for Minnesota. If a man sends me such trees he must either take them back or have a lawsuit on his hands. (Laughter.) I do not want to plant a tree older than two years. I have some Duchess trees on my place that are some twenty-eight years old; they take twenty feet of room on each side, and if you want to get the fruit you have got to crawl under, and those trees have not a bit of dead wood on them. My other trees are not quite as low as that, but wherever there is a tree with a high trunk it is sun-scalded.

Mr. Dartt: I want to correct a statement that the gentleman made when he refers to what I said either a year ago or at this time; he must have been sleepy. I never in my life objected to the manuring of an orchard unless the trees were of a blighting variety; then manuring is likely to increase the evil and make them blight worse. At one of those times they sent me down to Iowa I observed in the reports made that where an orchard had done well it was either thoroughly cultivated or well manured, and I have always been in favor of cultivating or manuring. I believe that is the only way to raise a successful orchard.

MY SEEDLING ORCHARD.

J. S. PARKS, PLEASANT MOUNDS.

I came into the state in 1863, very late in the fall, too late to do any planting, and all I did the first season was to take the spade and spade up a spot twelve feet square and then plant it with black walnuts and flower seeds the next spring. I had a few seeds that my friends had sent me from northern New York and Canada, in the neighborhood of the Fameuse and Snow apple, towards Quebec. Next year a neighbor and friend of mine was going to Red Wing with a load of wheat with his oxen, and I told him if he could get me a few apples to do so. I lived one hundred miles or thereabouts from Red Wing. He would be a long time on the road, and I told him if he ate all the apples he should save me the seed. He brought me the apples, but the only reason he did not eat them was because they were too hard. I sowed the seed from those apples he brought me, and that was the only seed I sowed except those I received from New York, but most of those I got were seedling apples, as that was the only thing that would stand in that vicinity. I had some very nice seedlings. I kept sorting and working away with the seedlings and root-grafts I got from my friend Springer. I once sent to Bloomington, Ill., for six thousand root-grafts of the old kinds,

such as the Northern Spy, King, etc., to try them. At another time I got from Ripon, Wis., twelve hundred root-grafts, and those were really of the hardy kinds, recommended by the State Horticultural Society of Wisconsin, but they killed before they bore fruit. I got the Walbridge and Haas, but they are dead and gone long ago. In that way I kept planting and working away with the idea of getting fruit enough for my family, and it has been nip and tuck to get that much except within the last few years.

In 1884-5, the hard winter, I had about three thousand trees that were about ready to bear, but a good many of them were in the nursery row. I had set out in the nursery row about three thousand trees ready to bear, and of all those I have only about eight or ten varieties left standing on the old stems, but a great many of them that died down at that time sprouted, and I have some seedlings and mixed varieties that came from those. I kept setting out and planting a few seeds every year, and I think that is the only way in which I can get any fruit to amount to anything.

These last two years I planted seeds with a view to getting something more hardy, or rather a better keeper and larger. I have a good supply of keepers, but they are not of large size. That is what troubles me the most. I had last season over forty varieties keeping in the cellar until the first of June, and the first of August I had a few varieties left, but they were too small. I have at this time forty or fifty varieties. I had hard work to get one hundred and sixty varieties to take to our local fair.

I have been lately planting seeds of the Tallman Sweet that was raised right under the Wolf River tree, with the object of getting something hardy and of the proper size. I am in hopes that later on we shall have something valuable from those seeds that will give us size and keeping qualities. I think "blood will tell" in planting apple seeds as well as in other things, and I believe by planting seeds from the larger apples and those of known keeping qualities we will produce something of larger size and a better keeper. My family has come to the conclusion that life is too short to bother with the small varieties, and we are discarding them as fast as we can. The big apple is better for all purposes and more profitable, and I believe can be raised just as well. The Wolf River trees bear the largest apples, and they are situated just where the wind can get at them, and they hang on through any wind, and I believe we can raise large apples that will hang on in the wind.

The first thing I did was to plant a shelter belt around them, and every tree was cooked long years ago; that was where I made my great mistake. I believe our best success on the prairie will be where the wind can get a full sweep at the trees. I have put out other trees as well as apple trees. I have tried deciduous trees, and I planted fruit trees. I had at one time twenty-seven varieties of tame plums and never got a plum from one of them. I had the same result with cherries and down to small fruit. I tried everything I could think of, and if anybody will suggest anything I have not tried I will try it. (Applause.)

Mr. Harris: How large a tree will it take to raise your Wolf River apple?

Mr. Parks: It depends on the ground.

Mr. Harris: Does it bear a reasonable crop?

Mr. Parks: Yes, it does. Where there is considerable shade it will bear.

Mr. Harris: How many bushels do you take from a tree?

Mr. Parks: Twenty bushels. A year ago this last season I picked twenty bushels from one tree. (Applause.)

Secretary's Corner.

THE IOWA STATE HORT. SOCIETY meets this winter at Des Moines, on Dec. 11th, in annual session.

NEW CHIEF OF FORESTRY DIVISION.—Albert R. Green, of the general land office, has been selected as new chief of division of forestry, of the Interior Department, authorized by the last congress.

THE NORTHEASTERN IOWA SOCIETY—holds its next annual session at Iowa Falls, Nov. 27-29. The secretary would be glad to know very soon of any members who contemplate attending.

THE ILLS. STATE HORT. SOCIETY.—A letter from the secretary, L. R. Bryant, announces the probability of the attendance of a delegate at our annual meeting. That society meets in Champaign, Dec. 11-13.

ANNUAL MEETING, WIS. STATE HORT. SOCIETY.—This society announces its annual meeting to be held at Oshkosh, in that State, on Jan. 14-19, 1901. Prof. E. S. Goff will represent that society at the coming meeting of our society.

A NURSERY CHANGE.—Mr. W. L. Taylor, who has for some time been conducting a nursery near Litchfield, has lately purchased the old Cutt's Nursery, at Howard Lake, and is planning to run his nursery there with a branch office in Litchfield.

THE NEXT IOWA MEETING.—A communication from the secretary of the Iowa State Horticultural Society announces their coming annual meeting to convene at Des Moines, Dec. 11-13. The writer would be glad to know of any who expect to attend this gathering.

THE MISSOURI HORTICULTURISTS.—A letter from the secretary of the Missouri society announces their annual meeting at Farmington, ninety miles south of St. Louis, at the same time as the meeting of our own society, Dec. 4th. Will any of our members be in that neighborhood at about that time?

MEETING OF AFFILIATED SOCIETIES.—It is expected that the State Forestry Association, the State Bee-Keepers' Association and the Women's Auxiliary will all, as usual, hold meetings at the same time and place and in conjunction with that of our own society. Come prepared to get the good from all these.

AGRICULTURE IN THE PUBLIC SCHOOLS.—It is reported that the state superintendent of public instruction, Mr. J. H. Lewis, is considering a plan for teaching the elements of agriculture, including horticulture, etc., in the public schools, and that steps are being taken to prepare suitable material for this purpose. If this report be true, Supt. Lewis is making a departure which this society has long advocated, and he may feel sure of our hearty support.

A BADGE BOOK is in contemplation in connection with the coming annual meeting. It will likely contain only the names of those who notify the secretary of an intention to be present. Each member whose name appears in the book will be furnished with a numbered badge to be worn at the meeting,

the number corresponding to the number set opposite the name in the badge book. For purposes of identification this device has been found a great convenience at similar gatherings, and will be, doubtless, with us.

WISCONSIN FRUIT AT MINN. STATE FAIR.—"I almost wish that your society was as liberal as you are with outsiders when we exhibit our cattle, horses, etc. I cannot remember an exhibitor from the bluffs along the Mississippi river north of LaCrosse ever going to Milwaukee, except myself, and I have thought it would work no injustice to give those people a chance to exhibit with you, say counties of Wisconsin bordering on the Mississippi, north of the south line of Minnesota. Their land and climate are so like yours and many of them attend your fair.

A. J. PHILIPS,
West Salem, Wis.

ENDORSES WOMEN'S WORK.—The article about forestry in your last issue of the Minnesota Horticulturist, written by Prof. Maria L. Sanford, is of the right ring. It appeals to me as eminently proper and peculiarly fitting for women to in every way help to promote or initiate the paramount subject of tree planting, forest preservation and legislation intended to that end, as the article in question pictures. Just think of it! What a transformation! "Long lines of shade trees along the country roads of our state and every school yard in the country a shady park," and all this to be accomplished with only a little energy and individual expense. And why, as Prof. Sanford says, should not this work go on?

St. Paul, Oct. 9, 1900. FRED. NUSSBAUMER.

COMMENTS ON RULES FOR EXHIBITS AT MINNESOTA STATE FAIR.—Closing your entries Saturday evening and everything in place for Monday morning will be all right and give all exhibitors an equal chance, also gives the judge a chance to inspect the different entries before the great crowds of Wednesday and Thursday come in to retard him in his work, but these rules to be effective must be positively lived up to. No friendly deviation should occur.

I do not exactly like Rule 9, as that may work a disadvantage to long distance exhibitors. For instance an exhibitor coming as far as Dartt, Harris or some others do cannot bring his orchard with him, but he might bring a fine plate of Wealthy or some other variety, and when that is noticed by some one who can go home nights the latter could easily start a spot or an evidence of decay, and by looking around in the country near by find some better specimens to replace with. This may not be done by honest Minnesota fruit men, but it has been done in Wisconsin. Look out for these loop holes.

A. J. PHILIPS.

BARBERRY VS. WHEAT RUST.—We horticulturists have often been called upon to destroy our barberries, upon the claim that they "aided and abetted" the wheat rust, and we ought to be willing to sacrifice such favorites for the general good. But for many years it has been a puzzle to me to know how there can be enough barberries in the few planted in the Mississippi Valley to account for the wheat rust which often is so very general; and I have often thought that some of our botanists were laying too much to the account of the poor barberry. For this reason it is quite interesting to find in one of the latest and best works on this subject, the following; in substance:

"The removal of the barberry bushes is said to reduce the rust, although many good botanists believe that the barberry is not necessary for the existence

of this fungus, and that, instead of it being necessary to have an intermediary stage of growth of the wheat rust upon the barberry, the wheat plants may be infected directly; and some of the best authorities also agree that it is quite possible that the wheat rust occurs at one stage upon some wild grass, instead of on the barberry." From "Diseases and Plants," Tubeuf & Smith.

S. B. GREEN.

PREMIUM LIST ANNUAL MEETING, 1900, MINNESOTA STATE HORTICULTURAL SOCIETY.—All Exhibits must be entered with the secretary and in place the first day of the meeting to be entitled to compete for premiums.

Exhibitors competing must be members of this society and the growers or makers of the articles exhibited. The articles exhibited must have been grown in Minnesota or manufactured from Minnesota grown products.

Each exhibit of fruit must consist of four specimens, except when otherwise noted.

No premiums will be awarded on unworthy exhibits.

APPLES.

	3d Prem.	1st Prem.	2d Prem.
Collection, not to exceed 10 varieties	$2.00	$6.00	$4.00
Each variety of apples (or crabs) included in the 1900 fruit list of this society or in the 1900 premium list of the Minnesota State Fair (kept in cold storage)		.50	.25
Each variety of apples (or crabs) included in the 1900 fruit list of this society or in the 1900 premium list of the Minnesota State Fair (not kept in cold storage)		.75	.50
Seedling apple, never having received a premium from this society, not kept in cold storage		3.00	2.00
Peck of Wealthy apples, the fruit exhibited to be at the disposal of the meeting	1.00	3.00	2.00

GRAPES.

Collection		3.00	2.00
Each variety exhibited included in the fruit list of this society for 1900 or in the 1900 Minnesota State Fair premium list		.75	.50

FLOWERS.

Collection of ornamental and flowering plants		5.00	3.00
Collection of cut roses		2.00	1.00
Collection of cut carnations		2.00	1.00
Table bouquet		2.00	1.00
Basket of flowers		2.00	1.00

HONEY.

Collection of comb honey *ad libitum*		5.00	3.00
Collection of extracted honey "		3.00	2.00

Geo. H. Whiting, Yankton, S. D.
G. L. Dibble, Parker, S. D.

H. W. Hinds, Parker, S. D.
E. F. Himes, Centerville, S. D.
M. J. DeWolf, Letcher, S. D.
A. Norby, Madison, S. D.
W. B. White, Olivett, S. D.

Prof. N. E. Hansen, Brookings, S. D.
C. W. Gurney, Yankton, S. D.
L. R. Alderman, Hurley, S. D.
Rev. E. D. Cowles, Vermillion, S. D.
C. E. Older, Luverne, Minn.
B. F. Hines, Beresford, S. D.

SOME MEMBERS OF THE SOUTH DAKOTA STATE HORTICULTURAL SOCIETY. TAKEN JANUARY, 1900.

THE MINNESOTA
HORTICULTURIST.

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THE EXPENSE OF THE PROPOSED NATIONAL PARK OF MINNESOTA.

SAMUEL B. GREEN, PROFESSOR OF HORTICULTURE AND FORESTRY, MINN. AGRI. EXPERIMENT STATION.

It has been proposed that the national government reserve for the purposes of a public park the land and water included in the Leech Lake Indian Reservation, in Minnesota, except such land as has been allotted to the Indians in severalty. Allowing for the land taken by the Indians, which no one proposes to interfere with, there would remain to be included in the proposed park 489,790 acres of land and 218,470 acres of water surface. Of the land 100,000 acres is classed as "timber land," that is, contains much valuable timber. The surface is gently undulating, and is mostly covered with trees, although there are some natural meadows. The water surface comprises three of the largest lakes in the state besides many smaller lakes and many miles of river that is suitable for canoeing. The lake shores are broken and picturesque, and the sandy beaches are good bathing places. There is also good hunting and fishing.

This reservation is crossed from east to west by the Great Northern railway and is reached from the south by a direct railway line from St. Paul. These lines of communication make this section easily accessible, which is an important point if it is to be set aside for the purposes of a public park.

There is apparently no good reason why this proposed national park should not be carried on as an example of good forestry and serve the purposes of a park at the same time. In Europe many of the woodland resorts are thus carried on, so that they afford not only good pleasure grounds but a fair return on the money invested. It seems to me that this is the only practical way of managing such a park as is proposed. The carrying out of such a plan means practically the establishment of a business which at the outset will result in the employment of several hundred men for several years in cutting two-thirds of the present stand of pine, and will thereafter be continued indefinitely, paying out each year probably at least $40,000 for wages and supplies. The data for the estimates of the yield per acre here given are obtained from bulletin No. 49 of the experiment station of the University of Minnesota, published in 1896, together with subsequent data which I have collected at various times and from several visits made to this reservation. I am very sure that the estimates given are conservative and that the balance between income and outlay

has not been made to appear more favorable than can be realized in practice. Each item is numbered, and following the financial statement will be found notes on each according to number, wherever explanation seems necessary.

IMMEDIATE OUTLAY.

(1)	100,000 acres timber land containing pine estimated at 625,000,000 feet, at $4 per M	$2,500,000.00
(2)	389,790 acres at $1.25 per acre	487,237.50
		$2,987,237.50
(3)	Houses and barns	15,000.00
(4)	Horses, implements, etc	3,000.00
	Total immediate outlay	3,005,237.50

IMMEDIATE INCOME.

(5)	By sale of trees now overripe and beginning to deteriorate, and which should be cut at once to save loss, estimated at two-thirds present stand	$1,666,666.67
	Balance of purchase price unpaid	$1,338,570.83

ANNUAL INCOME.

(6)	185 feet, board measure, per acre annual growth on 100,000 acres would be 18,500,000 feet, board measure, which can be cut each year without intruding upon the normal growing stock, i. e., the principal, at $4 per M	$74,000.00
(7)	For fishing and hunting privileges, cranberries, rents and pasture	21,500.00
	Total annual income	$95,500.00

ANNUAL OUTLAY.

(8)	Interest at 5 per cent on $1,338,570.83	$66,928.54
(9)	For administration and protection	12,500.00
(10)	For planting 3,000 acres with pine and spruce	15,000.00
(11)	For labor improving meadows, making roads, fire-lanes, etc	8,000.00
(12)	For implements, repairs, etc	5,000.00
	Total annual outlay	$107,428.54
	If debt is funded at 3 per cent instead of 5 per cent the total annual outlay will be	$80,657.12
	and the net annual income	14,842.88

ANNUAL INCOME AFTER TWENTY YEARS.

(13)	Increase 185 feet, board measure, on 200,000 acres at $4 per M	$148,000.00
(14)	Income from hunting and fishing privileges, rent of house sites, agricultural land, etc	10,000.00
(15)	Hay and pasture, 10,000 acres at $1	10,000.00
	Total annual income after twenty years	$168,000.00

ANNUAL OUTLAY AFTER TWENTY YEARS.

(16)	Interest at 5 per cent on debt $1,338,570.83	$66,928.54
(17)	Administration and protection	20,500.00
(18)	For planting 5,000 acres per year at $5 per acre	25,000.00
	Total annual outlay after twenty years	$112,428.54
	If debt is funded at 3 per cent instead of 5 per cent the total annual outlay will be	$85,657.12
	and the net annual income	82,342.88

(1) This 100,000 acres of timber land I estimate to contain approximately 625,000,000 feet of timber, which is somewhat higher than the government estimate, but it is considered a fair estimate by those who know the situation. This is here valued at $4 per thousand, with the expectation of cutting two-thirds of it at once on the selection plan, which will be more expensive than if it were logged in the ordinary manner, and perhaps will cost 50 cents per thousand in excess of ordinary expense. I believe that even under such conditions, $4 per thousand feet is a reasonable figure, since there is a railroad through the reservation, and the timber is easy of access by this or by water. There are also two saw mills of large capacity close by. I am inclined to think that this figure is under rather than over what can be obtained for the timber.

(2) There are 389,790 acres termed "agricultural land" in this reservation. But little of this is really agricultural land, in the ordinary sense of the word. As understood here the term "agricultural land" means only land having little or no pine timber on it. But this land is so poor in quality that little of it has any value for agricultural purposes. In view of the fact that there is such a large amount of good agricultural land in the timbered section of this state that is still unoccupied, it is ridiculous to claim it necessary to hold this land open for agricultural purposes. The agricultural land is figured at $1.25 per acre, the regular homestead price, which would be a reasonable sum for the government to pay the Indians for it.

(3) It is estimated that at least twenty families must be permanently located at once upon this land were it taken for park purposes.

(5) From many surveys made it seems fair to estimate that about two-thirds of the trees on this land are over-ripe; in other words, are not improving, and these, under good forest management, should be cut at once. This would mean the employment of fully two-thirds as much labor as would be employed were the whole timber cut down at one time. It would give a large immediate income, which could be applied upon the principal, thus reducing it by two-thirds. After this was cut out, it is estimated that the land would continue to render a certain annual income in timber, as shown by item No. 6.

(6) The estimate of 185 feet board measure per acre increase per year may seem rather high at first thought, but it will be noticed that it is figured on only 100,000 acres, and it is well known that there is a large amount of timber on what is known as "agricultural land" on which no increase whatever is figured. As I have found 185 feet per acre increase per year obtain in a number of locations in Minnesota, on land apparently no better or better stocked than this, I have thought that it is no more than fair to use this as the factor for the sustained yield.

(8) The interest on the balance of the principal not paid is here estimated at 5 per cent (although this money could be borrowed at a much lower figure) for the reason that the government is required to pay the Indians 5 per cent on money received from this purchase. If this principal were paid to the Indians at once, and the government were to borrow the money for this purpose, it would not cost over 3 per cent, which would result in the very material reduction of this interest of $26,771.42 per year.

(13) After twenty years I am sure that it would be safe to expect double the returns possible soon after taking the reservation in hand. This has been figured at $4 per thousand, but it seems very probable that in the course of the next twenty years timber as centrally situated as this and so very accessible will more likely be worth $6 per thousand. Besides the meadows and some agricultural land will have been opened up and rented out, and will afford an income much greater than that estimated in No. 4. The annual outlay, on the other hand, after twenty years, will not have increased much necessarily, except for purposes of planting and perhaps for a little closer supervision of the grounds.

The estimate for patrolling this land for fire protection would probably be reduced very materially by the assistance of the war department, which, it is more than likely, would detail a company of cavalry for this purpose. The estimate given does not take into consideration any returns from the sale of firewood and is figured on conditions now existing in our woods. It seems certain that after twenty years 40 per cent of the material which is now left in the woods by our loggers will be readily salable for fuel.

EFFECT ON THE SURROUNDING COUNTRY.

The immediate effect of putting this reservation into a park on this plan would be very apparent. Two-thirds of the standing timber, to the value of $1,666.67, would be cut at once. This would mean the employment of a large number of men and start a period of great activity in the country near by. When this had been done the source of wealth would not have been destroyed, as in the ordinary cutting of timber. There would still be employment in the park for probably 100 or more men continuously, in the harvesting of a $74,000 increase, the building of roads, the making of fire lanes and in other employment. Should the United States government decide to locate a company of cavalry there for fire protection, there would be in addition supplies for this force. This, with the families dependent upon the employes, etc., would probably mean the location at once, and permanently, of 500 persons on or near the reservation. This would make a large and permanent market for the farm products of the country near by. In addition to this, the natural attractions of the section are such that many tourists would come in, each of whom would leave some money behind, and this would assist in making a permanent demand for supplies from the hotels. It is probable that one or more sanitariums would be established for the cure of pulmonary diseases. These would be open the year round. School houses would be opened in the park, and the better agricultural land used for agricultural purposes.

If the above figures are correct, the proposed park, merely as a financial venture, will take care of itself. As an example in good forestry and a place for recreation for our people, it ought to be worth very much. Besides, from the purely economical standpoint, the establishment of this park would have the effect on the surrounding country that the establishment of any

great permanent manufacturing concern has, and would undoubtedly result in much improvement in the way of cutting timber in this state which so often has left a trail of stagnation behind it. Why not try such a plan as this? Surely the government can well afford to do so, and it cannot possibly be any worse than the plan of selling all the timber to the highest bidder, without any regard to the rights of posterity.

DESIRABILITY OF A FOREST HEALTH RESORT.

DR. J. W. BELL, MINNEAPOLIS.

The enthusiastic movement leading to the formation of the Minnesota National Park and Forest Reserve Association fully answers, in the affirmative, this question. To the medical profession of Minnesota, acting upon the suggestion of our efficient chief fire warden, belongs the honor of initiating this important movement within the state, which has, and should have, as one of its principal objects the establishment of a forest health resort accessible to the large centers of population. The beautiful pine forests, picturesque lakes, sandy, porous soil, moderate elevation and pure dry air, combine to make the north central portion of the state a natural sanatorium for the treatment of consumptives, neuresthenics and all invalids in need of rest.

Minnesota is singularly fortunate in having in the northern part of the state a most happy combination of soil, timber and climate, making it in most respects an ideal location for a health resort, especially helpful and beneficial to that ever increasing multitude—the neuresthenics and consumptives. On critical examination we find a sandy, porous soil, moderate elevation, coniferous forests, a pure, dry, cool, stimulating air, with a high annual percentage of sunshiny days, an absence of high hills or mountains to invite and condense moisture or interfere with rapid evaporation by acting as barriers to the free course of the dry western winds.

After considerable experience in the climatic treatment of pulmonary consumption, extending over a period of twenty years, during which time I have had occasion to investigate and test the value of our principal American health resorts, I have no hesitancy in affirming from actual experience that our coniferous forests in the north central portion of the state afford as favorable climatic conditions for the cure of consumption as can be found in any one section of our Union.

One of the strongest arguments in favor of our home health resort is the great advantage arising to the consumptive of being treated and cured in that climate in which he is to live and labor after restoration to health. One of the sad features of the climatic treatment of consumption is the banishment of the patient to a distant climate—far from home and friends—at great expense, where he is haunted by the thought that he must remain an exile or return only to perish from his malady.

The class of invalids benefited mostly by a forest health resort would be the semi-invalid class, consisting of the overworked and over-worried business and professional man, the clerk and teacher, the nervous, explosive, hypersensitive city child, a nervous wreck, largely the result of our high tension school system, and the weary and worn wife and mother, whose constant indoor life and ceaseless cares too often lay the foundation for nervous and pulmonary disorders; also that unfortunate class of over-civilized, nerve-shaken would-be invalids, suffering principally from the vice of

idleness and the apathy of luxury, whose lives are as empty and barren as the desert. May we not hope, as a last resort, that an actual introduction and a few weeks' close communion with rugged mother nature in this picturesque region might do something toward bringing them to a true realization of what constitutes life.

A forest health resort, combining the open air and sanatorium plan, would be a great boon to the large and increasing class known as neurasthenics. Strange as it may seem, the nervous, irritable, sleepless, neurasthenic, removed from his city work and worries, finds prompt relief in the pines, soon sleeps and eats better, and gains in strength, flesh and spirits.

Lastly, such health resort would prove of incalculable benefit to the tuberculous group, represented by one-sixth of our entire population—an invalid class of no mean proportion, when we recall the fact that the consumptive, like the wounded soldier on the battle field, requires at least one or two to care for him, often for a period of months.

A city, state or nation is truly great and prosperous only in proportion to the healthfulness of its people; hence no sacrifice or outlay of money and time within reasonable bounds should be deemed too great to secure to our people a park and health resort of sufficient acreage to meet the wants of all classes.

To secure and save a sufficient acreage of our primeval forests ere it is too late will require herculean effort on the part of all our good people interested in the larger humanity.

FORESTRY IN MINNESOTA.

CAPT. JUDSON N. CROSS, PRESIDENT MINN. STATE FORESTRY ASSOCIATION.

(Read at last annual meeting of the Minn. State Forestry Association.)

The plan adopted by this association in 1896 for the creation of forest reserves, which has been given such generous support by all the allied societies interested in the agricultural development of the state, and by the newspapers and periodicals, was crystallized into law passed by the last legislature, substantially as recommended by this society and passed by the lower house of the legislature in 1897.

The State Forestry Board, created by the law, was duly organized, Governor Lind appointing as its members the persons recommended by the several allied associations and boards as provided by the act. No lands have yet been donated to the state under its provisions, but assurances have been received that several owners of cut-over, non-agricultural lands are preparing to tender to the board quite large areas. It must work on cautious and conservative lines, going ahead a little every year, we trust, moving as fast at least as the people demand. But its object is to cause the non-agricultural lands interspersed among agricultural tracts, in all parts of the state, so far as practicable to be regrown with forests for future needs, as a beneficence to our children and their children.

The national forest park, to which I alluded at the last annual meeting, as then contemplated by my old college and army companion, Col. J. S. Cooper, of Chicago, has taken definite shape. Col. Cooper organized a very successful congressional excursion to Leech and Cass lakes last year, which, I trust, will be instrumental in creating a national forest park around the headwaters of the Mississippi river. This would fill the hopes of the

Woman's Council, which has worked for it, and of the state medical societies, which applied to the legislature at the last session to create such a park. But the object of this association is to encourage the preservation of the forests everywhere, where not needed for farms; in forest parks or otherwise, even by private reserves, around the headwaters of our water courses; and, therefore, let us welcome Col. Cooper's plan for a national preserve, for all the people of the Mississippi Valley.

Although the appropriation to this association to carry on its educational work, etc., made by the legislature for several years past, is no longer continued, we still hope to do much good work along these lines, particularly in the distribution of forestry literature on hand and the continuation of our services of forestry press articles as far as possible.

I believe that to these articles much of the good will of the last legislature towards advancing forestry interests was attributable. I hope that the editors of the state papers and periodicals, who have aided us so much in our forestry educational work, will continue their excellent work, although we no longer have funds to pay the expense of collecting and furnishing material, in an organized way. We fully appreciate the work they have done in the interests of forestry.

I congratulate you on the awakened interest in the subject of forestry, especially in our own state, where this association, the oldest in the United States, has worked so long to educate the people on forestry topics, as well also in the whole country.

I take the greatest pleasure in commending the most excellent work being done by our chief fire warden, General C. C. Andrews, not only in his special work of preventing forest fires but in disseminating forestry knowledge among the people.

The enlargement of Itasca Park, by the last legislature, saving for all time the extreme headwaters and spring-lake sources of the mighty Father of Waters, in a state of nature, is a fact for extreme felicitation by all of us and, especially, by every lover of the woods and streams and lakes.

COMMERCIAL ORCHARDING IN TURNER COUNTY.

L. R. ALDERMAN, HURLEY, S. D.

(Read before the State Horticultural Society, at Parker, S. D., Jan. 18, 1900.)

The first problem in the fruit business is location, that vital essential to trade which makes the ratio of value between two given points only a few miles apart as 1 to 500,000. Location affects the welfare of the orchard and accessibility of the market, for inasmuch as our fruit season, from the first crate of berries to the last barrel of apples, is the hottest kind of summer weather, we find that in spite of our shipping points on three different roads it is difficult to move the perishable stock fast enough. But all fruit men doing business in the state have to face the same conditions, and as we are on the ground (as the drummer says) we have a constant advantage. Right there under the heading, a location, I wish to promulgate what I suppose is a general truth: that in proportion as you increase the hazards of an industry you increase the rewards of success—and among ourselves it may be safe to admit that fruit raising in South Dakota fairly bristles with uncertain results. Following out this idea I will cite the example of the fruit

belts of Colorado, Oregon and California, where fruit culture is an exact science, where a certain amount of labor and a certain amount of water turned through a sluice produces a certain amount of fruit—and what is the result? Too often these immense crops rot under the trees or are harvested at a loss. I remember meeting a gentleman several years ago who had made a large fortune in blooded horses. He said it took the bulk of his profits from his stock farm to maintain the luxury of a California fruit farm.

One of the finest exhibits in the horticultural building at the world's fair was owned by a young lady from Oregon, who personally manages her own fruit farm. In our exchange of experience concerning our mutual vocation, she mentioned that the strawberry crop netted her 1½c per quart that year; my statement that ours had netted 10½c per quart met with well ,bred acquiescence, but probably did not improve her estimate of my veracity. But that region is not a menace to us, as they supply a demand which we never can.

In contemplating the domain of hazardous fruit raising, which I will bound roughly by Maine, the Mason and Dixon line, the middle west and the northern limit of the apple, we have this selfish consolation, that the element of uncertainty is by no means greatest in our own state. With us we place our trust in such fruits as will stand any rigor of climate they may have to endure and endorse the gamblers' motto, "The best you can expect is the worst of it."

In a large portion of the rest of this region, growers are engaged in the raising of fruits which will only stand a certain degree of cold. So when thirty degrees below travels 300 miles south of here, as it did in the winter just passed, it breathes on these tender fruits as the angel did on the hosts of Sennacherib. We have never met with any considerable loss of trees and can hardly realize what complete annihilation would mean. And yet these men standing on the ruins of their blasted hopes, begin their task of years again, and in this way they teach their lesson of perseverance "even unto the end."

In concluding the subject of location, I will say that our orchard is not situated where it is through chance or accident. While it is true its inception antedates all railroads in the country, our people believed in Dakota and its future and that the day would come when an orchard of this size would find a ready demand for its products within the confines of the state. This day arrived years ago, and we have already begun to divide the trade with other orchards in the state, but there is room for us all. While it is true that we have some advantages over the fruit grower further south, the reverse is also true, and perhaps the greatest advantage in their favor is the cheaper labor and cheaper fruit packages. Day laborers in the fall receive one-third more in Dakota than they do in Missiouri, and crates and barrels probably cost a third more. And it is probably a fact that we pay twice as much to harvest strawberries as they do in Missouri, still as long as we command three times their selling price, I think we can stand it. Briefly, in closing, my experience has shown me the following facts which I submit to the present and prospective fruit growers of our state:

That we can and do raise summer and fall apples that are unexcelled in our markets.

That plum culture intelligently pursued is an unqualified success.

That cherries will pay big returns for labor expended, though short-lived. And finally currants, gooseberries, raspberries and, especially, straw-

berries, are sure money makers if they can obtain sufficient moisture. Each group requires its fund of special knowledge, which will come to you little by little as you read and observe. The more I think of it, the more firmly I become convinced that it must have been a fruit grower who tampered with the old adage and made it read "All things come to him who hustles while he waits."

FRUIT CULTURE IN SOUTHERN MINNESOTA.

C. E. OLDER, LUVERNE.

(Read before South Dakota State Horticultural Society, January 16, 1900.)

In treating of this subject I will try and give in a few words some of our experience in fruit production, as the experience gained in our corner of Minnesota will apply in a larger degree to your own conditions than from almost any other locality.

Settled for the most part at about the same time as your state, and largely by the same class of people, anything in trees, fruit or flowers growing and doing well with one of us will do the same with the other when like treatment is given it. We may not be able to make conditions, but we may help to make conditions; we may not be able to make opportunities, but we can take advantage of opportunities presented and turn them to our account. We have experienced disappointments, numerous and trying disappointments, by not treating the subject of fruit growing with the intelligence that we usually use in all or the most of our every day farm affairs. We have had hail storms, drouth, hard, cold winters, long, dry spells in summer, hot winds from the desert. The other evils mentioned are being overcome largely and to a great degree by treating in an intelligent manner and using the facilities afforded us by our own and others' experiences. I do not mean by this that we have overcome all obstacles, by any means, but we are having a fair degree of success where otherwise we have failures. I believe that a small nursery, at least one in every county, well patronized by the home people, where the neighbors can get trees and set them out within a few hours after they are dug, is one of the elements of success in this business. There is no change of climate, and the stock is adapted to your locality, for it grew there, and your home nurseryman will protect your interests by protecting his own. If it is allowed to dry out, you alone are to blame, because you saw it taken from the ground.

In our part of the country, and this section is also part of our country, with its drying winds the roots of trees will not stand exposure to any extent and live. Evergreens can be set out and grown with as little risk as cottonwood, but they must be handled on a damp or cloudy day; the least exposure thickens the sap, and the tree dies. Since adopting this plan we have good success with evergreens. The apple trees that are doing the best with us are the varieties recommended by our own horticultural society either for general planting or for trial. I need not name the varieties, but I cannot refrain from mentioning the Wealthy and Patten's Greening, the most valuable of all the new apples produced in the new states, Iowa and Minnesota.

In setting our orchards we set the trees north and south, the trees ten or twelve feet apart in the row, with the rows about thirty feet apart, leaving a clear place to cultivate some hoed crop and at the same time making it easy to cultivate the trees while young. Setting raspberry or currant plants

in the rows between the trees makes easy cultivation, and they do well under partial shade. Protect the trunks of apple trees with a "tree protector." It secures them against mice, rabbits, sun scalds, etc. It is one of the best devices yet brought out and gives a "finished" appearance to the orchard.

In plums, we have a good list now, thanks to the earnest workers of our own and other states. Bushels and bushels of seed are planted every year in our state, and we have the wonderful Surprise and Rollingstone with the Aitkin, Ocheeda, New Ulm, Mankato and others of the natives of large size and fine flavor as the results. Add to these the De Soto, Weaver, Forest Garden, Wolf, Wyant, Stoddard or Baker and the Cheney, and we have a magnificent list to select from. Some may do best in one locality, others in another, but all are valuable.

The list in cherries is not large, but is confined as yet to two or three varieties, the Early Richmond taking the lead.

Currants, gooseberries, raspberries, strawberries are giving good returns and are largely grown for home use or local market.

I cannot in this paper give the methods of caring for each, but every fruit must be cared for in a manner suited to itself.

Brothers, let us keep on trying and comparing results with one another, so we may all get the benefit of each experiment and not go over the same ground in so doing, and we shall see, in a small part, the fruit of our labor and an advance all along the line.

THE FARMER'S GARDEN AND ORCHARD.

DELATIUS HINMAN, YANKTON, S. D.

(Read before S. D. Horticultural Society, Parker, January 17, 1900.)

There is nothing the farmer will or can do that will give greater pleasure in his household than to provide them with the fruits and vegetables that may be produced from his farm in their season.

The garden with many is of secondary importance. After the field crops are planted if there is time to spare their thoughts are turned toward the farm garden, and some early potatoes are planted and, possibly, a small piece of sweet corn (often the corn is omitted). Should it be a surprise to any that the good housewife, who is ever on the alert for delicious vegetables for the table that should be found in the garden where nothing but potatoes, field corn and wheat and oats can be found, becomes discontented and sick of the farm, that should be producing many of the luxuries of life. for the table, that should be found in the garden where nothing but potation than will South Dakota. It is not necessary to enumerate a list of vegetables that should be grown in every farmer's garden. But don't scrimp the garden plot; make the rows long that a horse and cultivator may do most of the work of keeping the weeds in subjection. Wife does not agree with me on the long rows as it is too far to walk to the other end.

In planting melons be sure to have plenty for home use and give every member of the household the privilege of helping themselves to melons whenever they choose. Perhaps they cannot tell a ripe melon; that should not prevent them from the pleasure of picking a melon, having a large supply for family use. Plant more for the benefit of the neighbors. Lastly, plant some for the benefit of the boys, who delight to exhibit their skill by stealing ripe melons in the darkness of the night. If it is known that they are grown for their benefit it deprives them of much pleasure, and the chances

are that those melons will have to be marketed. With new potatoes the last of June, a succession of sweet corn and melons from August to November, the farmer has a living that his city cousins may well envy him.

As we look upon a majority of the farmers in our state we find but little attention given to the orchard. Not but that the fruit tree agent has been extensively patronized enough so as to perhaps give our state an abundance of fruit. I had an orchard planted on my farm twenty years ago, consisting of a large variety of apples, knowing no difference in varieties as to hardiness. The Duchess and Wealthy commence bearing the third year after planting, and they (with the exception of one year) have grown us a fine crop of apples every year since, and today every tree of those two varieties that were planted then are living and are grand and noble trees. As to all the other varieties, suffice to say were I to plant another orchard of apple trees I would allow but two varieties of apples to be planted in it.

Some may say, have a few winter apples growing. I want to tell you that one tree of the Duchess or Wealthy will give you more winter apples than any six winter apple trees I have seen in Dakota, with more than six times the satisfaction.

As to plums and cherries I have had but very little experience. The birds harvest the cherries for me each year.

But in sight of my place is one of the best cherry orchards I have ever seen in any state, owned by Mr. Kaucher. He planted an abundance of mulberries, which the birds eat in preference to the cherries.

A variety of plums should be planted on every farm, there can be no discount on them.

PROTECTION OF SMALL FRUITS FROM FROST.

PROF. J. WARREN SMITH.

(Read at June meeting of the Columbus, O., Horticultural Society.)

The surface of the earth and the objects upon it are warmed up rapidly during the day time, in bright, sunshiny weather, but at night the heat is radiated just as rapidly into space, until the earth is cooler than the surrounding air. The air then in contact with the earth cools by conduction, and, as the air is a poor conductor, the cool strata of air is very thin and lies close to the earth if the air be calm and still. The cooled air in lowlands and valleys lies still and gets colder and colder. But on hillsides, being heavier as it cools, it slides slowly down into the valleys, increasing the area of cold air there, and lifting up the overlying warmer body of air, which in turn flows in horizontally to take the place of the colder air on the hillsides which has descended. This movement of the air accounts for the great difference in damage by frost on different fields. The successful grower of fruits and vegetables that are liable to damage by frosts must have this movement of the air in mind on clear, still, frosty nights. Frosts are not apt to occur when the air has considerable motion, as it is continually mixed, and the warm air is being continually brought in contact with the cooling ground. Neither do we fear a frost when it is cloudy, as the clouds form a curtain to prevent or check the free radiation of heat from the ground. Local bodies of water, by keeping the air more nearly saturated with water and thus tending to raise the dew point above the point of frost formation, should be taken into account in locating tender or early

plants or fruits. Moisture in the air, whether invisible or not, tends also to prevent the loss of heat from the ground by radiation; on the contrary, a limited amount of moisture in the soil tends to increase the danger from frost by increasing the evaporation and the consequent loss of heat at the surface of the earth and plants.

It is evident, then, that fruit and vegetable growers in the hilly or rolling sections, like most of Ohio, should so place their earlier and more tender crops as to avoid the lowlands and valleys and very wet lands, and plant on the hillsides or ridges; or, whenever it is possible, to take advantage of bodies of water and plant on the leeward side. An intelligent and experimental study of these conditions and locations must be made, however, by each one for himself.

The artificial appliances for protecting crops against frost are based upon the following effects and conditions or a combination of them, for one result is never obtained without the others also, to a partial extent at least: to actually cover or roof in the plants; to prevent a rapid radiation of heat from the earth; to increase the moisture in the air; to directly warm the air; to create artificial drafts, whereby the air is mixed and the cold air is not allowed to lie at the surface of the earth.

Covering with screens of any sort must necessarily be limited to small lots because of the expense, but strawberries and other low plants may be effectively protected with straw or hay, and frequently young potatoes may be saved by covering them with earth by means of the cultivator or plow. Radiation of heat may be checked by building frequent smudge fires on the windward side of the orchard or field, particularly on limited bottom lands, where the smudge would not move far. But when, to secure the smudge, a material is used that will also add moisture to the air, the cheapest and most effective plan is probably in operation. The smudge of vapor and smoke may be secured by building frequent fires of damp straw or stable manure about the orchard or field. A good method is to pack damp stable manure into common grain or burlap sacks. They should be distributed through an orchard in rows about one hundred feet apart and about fifty feet between sacks in each row. When it is necessary to use them, a small amount of coal oil should be poured on each sack and ignited. It is usually unnecessary to fire more than every second or fourth sack. These sacks will burn with a smouldering fire for several hours. The amount of heat set free by burning one sack of manure weighing fifty pounds and condensing the water vapor near the earth would be sufficient to raise the temperature twenty degrees in a space seventy-five feet square and twenty-five feet deep. If one-fourth of this heat remained within this area it would give ample protection during an ordinary frost. Bales of wet straw have been successfully used. One hundred pound bales were cut into four pieces and properly dampened.

The best plan of all, however, is to use portable smudge fires. A wire netting can be stretched from four stakes on a low truck wagon or sled and covered with a considerable thickness of wet manure. Dirt is then thrown on the wagon body to protect it, and pots of burning tar or oil are set under the straw. A barrel of water is carried on the wagon to keep the straw wet. In this way the fire can be moved wherever it is most needed, which is generally along the windward side of the orchard, but which may be in the lowest place; the loss of heat by an upward draft is prevented, and instead it has

been found that the smoke and vapor from this fire spread out in a long trail behind the wagon, settling down rather than rising to any considerable height and effectively shrouding the orchard or covering the field with a thick fog. One team can protect a great many acres in this way. The plan is well worth adoption in this state, and we trust that whoever does attempt it will write our office in Columbus of the results.

A mixing of the air can be effected by building numerous fires; these will also raise the temperature of the air to an appreciable degree. The Riverside Horticultural Club, in California, in 1897-8, carried on very careful experiments, and among them was the use of wire baskets of coal scattered about the orchard for the purpose of giving dry heat to the air. Their best results were obtained with from twenty-five to fifty baskets to the acre. In one case one man, working alone, with twenty-five baskets to the acre, raised the temperature of his fruit orchard from three to five degrees and saved his crop of oranges, worth $400. The cost of equipping an orchard with fifty baskets to the acre was about $5, and the fuel to run them for one night was less than $3. Where coal is as cheap as in Ohio there should be a thorough test of this plan.

Cabbages have been effectively protected in Texas during temperature considerably below freezing by an handful of hay placed on the north side of the plants, and potatoes were saved by covering with old sweet potato vines. Strawberries not mulched or protected by hay last winter were generally killed there, while protected strawberries were largely saved. About ten tons per acre of hay, costing about $1 per ton, was used. In the extreme south very much is being done in protecting against frosts and freezes, and in experimenting in smudges, irrigating and spraying, etc., to protect the crops.

ITEMS FROM PRIVATE EXPERIMENT STATION AT BEDERWOOD, LAKE MINNETONKA.

ROLLA STUBBS.

Apple trees came through the past winter looking good and healthy, and made a good growth this past season. Some eight or ten trees out of 300, from three to five years old, died, the roots being killed by winter freezing (one Ben Davis, three Martha crabs, two Wealthy, etc.). Out of nearly fifty varieties there are no trees looking better than Patten's Greening. Some seedlings bore this year for the first time, and all bore a fair crop. There was not a tree affected by blight this year.

Our Minnetonka Fruit Growers' Association shipped 2,000 bushels of crab apples, which brought $1.00 per bushel; some 300 or 400 bushels of crab apples marketed in Minneapolis. Standard apples, over 2,500 bushels, were marketed in Minneapolis at from 75 cents to $1.00 per bushel, mostly Duchess and Wealthy.

Plums did well here and were not bothered with curculio or bloating at time of bearing. The Eureka plum was the heaviest loaded this year, heavier than for years past. The Hawkeye plum bore for the first time; they were four years old. I pronounce them an excellent plum, being so large and smooth.

The Early Richmond and English Morello cherries bore fruit for the first time since setting. The eight weeks of dry weather hurt them very

much. I think that cherries are going to do well and am encouraged to plant more of them. I set several thousand apple grafts and other varieties early in April. They started to grow nicely till the 20th of May. We did not have any rain from then until July 4th, consequently the grafts all died. Several thousand grafted trees, two years old, made a fine growth, running from five to six feet in two years. A very small per cent died from winter-killing. Rabbits did not bother fruit trees any last winter, one reason being because there was a very small amount of snow fell, so they could find plenty of forage.

The strawberry crop was cut short by drouth. The vines were loaded down with green berries and blossoms, but where we ought to have had 200 cases we got only twelve.

Raspberries were also damaged by drouth. We did not have as many berries as last year, but nearly made up the differences to us by receiving better prices. The Minnetonka Fruit Growers' Association sold $13,000 worth of raspberries, and there should have been $5,000 or $6,000 worth of strawberries.

I would like to call your attention to a raspberry called the "Shipper's Pride," originated in this county. It has been fruited now ten years, having no protection and not covered any winter and has never winter-killed. The berry in size and color is equal to the Marlboro and superior in flavor. I have been watching the habits of this fruit for three years past. Last winter was a hard winter on small fruit, but the very tip bud of Shipper's Pride came out nice and green. The vines have never been put on the market until last spring. They commence to ripen June 27th, and are shipped from then until September 10th. They yielded $700 worth of fruit per year from three acres the last two years. I think they pick as easily as Marlboro and stand well to be shipped after having been ripe two days, which is a good quality in them. If they do as well in other localities as in this, there will be a great many acres set out. I can fully recommend this raspberry to be the best ever introduced that I have known of, as they save so much labor by not having to lay them down in winter or take up in spring.

Currants were a good crop this past season, but were bothered some with currant worm. One time spraying was all they required. Victoria are doing the best out of five varieties that I have.

Frozen Onions.—Unless the onions are frozen too hard they will come out all right if they are not moved at all, and covered with a few inches of fine hay. The onions may remain slightly frozen all winter and gradually will thaw out toward spring without loss. Alternate freezing and thawing is what spoils them. The conditions best suited for wintering onions are similar to those required for potatoes, although onions will stand a lower temperature than potatoes. Onions should be kept in a dry place with a temperature as near the freezing point as possible, without falling much below it, and not higher than 40 degrees. The red and yellow sorts are as a rule better keepers than the white kinds. In tight barrels headed up they are quite likely to spoil, and to spread them on an earth cellar floor will have much the same effect.

CHILDREN'S PLAY GROUNDS.

PROF. S. B. GREEN, MINN. STATE EXP. STATION.

In many of the cities of Europe and this country one will notice with surprise the pains taken to furnish playgrounds for children and young people. The wants of the little tots are well looked after in a variety of ways, but nothing seems to please them quite so well as a few loads of sand that when slightly moist can be moulded and dug into all sorts of shapes. One of the most interesting sights to me is a group of children watched over by parents or nurses, amus-

View in Hyde Park, London.

ing themselves in this way. While it may not be thought necessary in the rural districts to furnish a pile of sand for this purpose, yet I know very well that there are many country schools that would be much more attractive to the children if they were supplied with a few loads of sand for the younger pupils to play in, and it will be found that even the older children will often get much pleasure from it.

The parks of our great cities are great blessings, being, as they are, sort of "breathing spots" where man may have a little chance to breathe and think in a natural way, out of the "hurley burley" of every day city life. I notice with pleasure the quite general doing away of signs forbidding one to walk on the grass. This is as it should be, and with the exception, perhaps, of a few small areas where something special is attempted there is no need of holding

the grass as too sacred to be walked on in our larger parks. What of it if it is worn out? How can it serve a better purpose?

The illustration is from a photograph taken in Hyde Park, London, where many city children gather to play. I had set up my camera for a picture of some very fine old English elms, when child-like all the children from near by rushed in to have their pictures taken, and as they added so much to the appearance of the scene I was delighted to have them. It may be noticed that the ground is bare where shade of the trees and trampling of children's feet was too much for the grass, but how exceedingly weak in comparison the picture would look if the grass was all perfect and the children were left out.

THE BEAUTIFUL IN NATURE

MISS LENA M. FREEMAN, AUSTIN.

The habits formed in early years are our masters in the future. Then, how important that we form good habits. Let us work, when we work—no dilly-dallying, no procrastination of necessary duties, no shirking of our share of the work, as usually, if we shirk our part, some other patient, uncomplaining one must do it. We must put our shoulder to the wheel of progress and help turn. But, having done our share, then we must take time for rest and recreation. Rest is needful in this intensely busy, pushing age. A person, over-tired and over-worked, can enjoy nothing. One's nerves will rebel at the sounds and echoes of nature. Music may be sweet and quieting to healthy nerves, but oh! what torture to diseased nerves. The soft prattle of childhood is pleasant to the ear of a loving mother if not exhausted from over-exertion; but a mother nervously prostrated is not fitted for her high calling, but, instead, is apt to mete out unmerited rebuke and unjust chiding.

This life is short at the best; it is soon gone; we must enjoy the fleeting moments as they pass and not wait for some more auspicious time in the future. The future, when it comes, is just as busy as the present. There is no better time than now to cultivate our powers of observation and "take time for beauty." Live not for money-getting alone, else you will see no beauty in anything except the golden glitter of mammon. Be not like the "man with a hoe," heart full of sordid toil and slavish, miserly love of greed and gold. Don't say "I am only a farmer," but proudly magnify your calling. Have you forgotten the illustration in Bunyan's Pilgrim's Progress, of a man incessantly at work with his muck-rake, never once looking up, while above his head hangs an immortal crown, to be his just for the asking?

Live not for fame, a mere bubble of air! Live to do good! We are not all destined to become worldly great, but, touching elbow to elbow, it is our duty to help uplift each other. Embrace no creed which excludes sympathy for your fellowmen. Let not your heart be hardened by pride, avarice, self-conceit and introspection; instead, cultivate sympathy, humility and benevolence. What we love, we enjoy! There is beauty in nearly everything. Let us look for and expect it, and thus fit ourselves to enjoy the many changing moods of nature. A sluggard cannot do this. "Up in the morning early" is a good maxim. Teach the little children to find "tongues in trees, books in running brooks, sermons in stones and good in everything." The merry carol of the lark is certainly more tuneful than the caw of a

crow; then find your life's enjoyment and recreation in loving the beautiful in nature, and there will be no room or taste for frivolous, worldly pleasures, and consequently no death-bed regrets.

Horace Bushnell's daughter says of him, "He saw twice as much as most people do out-of-doors; took a mental survey of all land surfaces, and kept in his head a complete map of the physical geography of every place with which he was acquainted. He knew the leaf and bark of every tree and shrub that grows in New England; estimated the water power of every stream he crossed; knew where all the springs were and how they could be made available; engineered roads and railroads; laid out, in imagination, parks, cemeteries and private places; noted the laying of every bit of stone wall, etc. etc." How much enjoyment and profit has life to such a man! John Burroughs, John Muir, Ruskin, Wordsworth and many others, are also examples for us to imitate, in their study of nature. Fortunate, indeed, is the one who can skillfully immortalize some beautiful scene on canvass, or by a happy word-picture establish one's impressions in prose or verse.

The house-mother is as busy as the father; many times her hours of work are much longer, and she longs for some beauty to enliven the monotony of the daily routine. So she tries to cultivate a few flowers out-of-doors and in, or train an ornamental vine, but it is often hard work without a man's hand to help. So, please delight the good wife and daughter by occasionally "lending a hand" and tidying up the yard and surroundings of your home. Let your rooms boast of a few house plants; they need be nothing choice; just a few geraniums, if nothing more. Let me read you an extract that I came across the other day. "Geraniums have a way of looking several directions at the same time; they are such good-natured, free-hearted fellows and give of all they possess for the good of others. You never see a geranium getting the dumps or sulking around or refusing to bloom, just because they can't have everything their own way. Ah! but they are brave fellows—these geraniums. I would rather have them, with their ever-blooming cheerfulness, their sturdy hold on life and their brightness and freshness than all the choice, once-a-year, flowering exotics you can bring me. They are like the good, sensible working class of people; they bloom every day in the year, cheering and comforting hearts, wherever they are, and brightening homes that would otherwise be mere hovels."

Now, having said my say on the topic assigned to me, I have a little grievance to air before this meeting. During the past year or two, I have read several criticisms in our farm papers as to the advisability of giving the women so much room on the program of our horticultural and dairy meetings. The criticism is, that the papers written by women are not practical; that they never come to the point; that their ideas are visionary, ideal and of school girl simplicity. Well, with due humility, I trust, I admit that perhaps such is the truth! At least, at present, I would not argue with or question the wisdom of the decision reached by the "lords of creation;" but, remember, that woman, whether occupying the sphere of wife, mother or daughter, is pre-eminently a home-maker. If, by cultivating a love for the beautiful in nature, the training of ear and hand in music, the leading to a pure taste in reading, the giving of heartfelt sympathy in our home life, thus keeping our boys and girls under the safe influences of home and away from the enticing allurements of saloon and questionable amusements—if

this endeavor is not practical, instead of theoretical and visionary; then I fail to understand what in life is important or of any account whatsoever.

The boys and girls of the farms are our choicest treasures; and whatever is for their uplifting and advancement must be our highest aim in life. Then, scorn not the timely efforts of the women, as we unceasingly labor to accomplish this happy result, but, instead, cheerfully give us your hearty "God speed."

DISCUSSION ON CURCULIO.

Prof. Otto Lugger: There are but two curculious that attack plums, the plum gouger and the plum curculio.

Mr. Lord: You say they more particularly affect the outside rows of trees.

Prof. Lugger: That is owing to mechanical reasons; they go to the first trees they can reach.

Mr. Lord: That gives me a new idea. I had a row of Cheney trees on the outside of my plum orchard, and they were the most damaged. I suppose it was because it was the Cheney.

Prof. Lugger: As a general rule, the insects take the first tree they can reach.

Mr. Jewett: Don't they sometimes hibernate in the orchard?

Prof. Lugger: Yes, but you hardly find such a condition. Keep the ground free from rubbish; that will remedy the evil. It is not only the curculio that is harbored in the rubbish, but a great many other insects.

Mr. Lord: From my experience and observation, I believe if we were to plant the Cheney, the Hawkeye and the Surprise together we would catch all the curculios on the Cheney.

Prof. Lugger: That is true. I have frequently noticed the English sparrows picking to pieces the blossoms. They never eat a particle of the flower, as I have killed a great many and examined them and never found anything of the kind. Three years ago I had the opportunity of looking over the plum trees of Germany, and I found that the English sparrows were also picking the plum blossoms there, so I concluded it was an inborn habit of the sparrow. However, I found in Europe there are other snout beetles that make small holes in the young fruit, and the sparrows over there were engaged in killing and eating them. So in Europe the sparrow is doing some good by eating the injurious insects in the flowers, and in this country, after the great number of generations he has been away from his native home, the instinct is still there; he is looking for something that is not there.

Mr. Busse: How long do the curculios remain in the plums?

Prof. Lugger: You can find them quite late in the summer. The insects appear at such long intervals there may be some of the old ones about.

Mr. Crane: Is there any remedy for the plum pocket?

Prof. Lugger: That can be controlled with Bordeaux mixture. Some of those diseases are becoming so prevalent that it is difficult to control them. Last year nearly the whole southern part of Europe was affected, nearly all the cherry trees were destroyed by a disease that caused a bitter flavor in the cherries. That disease is unusual.

Mr. Crane: About half of my plums rotted last year; is there any way to prevent it?

Prof. Lugger: Is it a disease, or is it caused by insects? I cannot say without investigating the plums. How does the trouble show itself?

Mr. Crane: It is a disease.

Prof. Lugger: That can be controlled largely by the use of Bordeaux mixture. It is an excellent remedy for a great many diseases, and it is so cheap and it can be applied so readily that it is a very useful remedy. By adding a little Paris green you can kill out insects at the same time. It will never do any harm. The tree will bear more fruit, and it will be stronger and better on account of such treatment.

THE FRUIT REGION OF THE BIG BEND OF THE COLUMBIA.

W. W. PENDERGAST, HUTCHINSON.

Following the Columbia a hundred miles up from Wenatchee, the first Great Northern station on the west side of the river, to Barry, at the mouth of Grand Coulee, you describe an irregular semi-circle, known as the "Big Bend country." For most of this distance there is on each side of the river a narrow ribbon of land, also very irregular and varying in width from a few rods to two or three miles. This first bench lies at an elevation of about one hundred feet above the river. The soil is gravel intermixed with sand and disintegrated basalt. It will produce but little without irrigation for the first twenty or thirty miles, but the Wenatchee, Entitat and one or two other large streams, having their sources in the Cascades, make water plentiful and easily accessible from the west. There is but little opportunity to irrigate on the east side, as there are no Cascades to furnish the water supply. Some fruit of several species is grown without artificial watering.

It is on the west side, however, for a distance of eight miles up and down the river from Wenatchee, the place where the foot-hills retreat two or three miles, leaving, perhaps, ten thousand acres for the horticulturist to revel in, that one is astonished at every step by the beauty, the abundance and the superb flavor of the glistening ruby, gold and emerald balls that dance and beckon to him to come and gaze and eat his fill.

The fruits grown here are apples, pears, peaches, apricots, plums, prunes, quinces, grapes, cherries, nectarines and mulberries, besides all the kinds of small fruits found in the temperate zone.

Besides the foregoing, sweet potatoes, tomatoes and peanuts find a congenial home here on the orchard land. Alfalfa delights in a light soil, plenty of water and freedom from weeds. Tickle the earth here with a harrow, and it laughs with a bountiful harvest of this "sage land clover."

Further up the Columbia good fruit can be grown on the first bench without artificial irrigation. The soil is stronger and more retentive. The yields, however, will not be so prodigious as in those spots where the rivers are brought into requisition and made to contribute something towards the success of the crop. All this narrow strip can be made the very best orchard and alfalfa land. Watermelons, too, equal in abundance those of Georgia. Strawberries are very large and of the richest flavor. The vines too are exceedingly prolific. The same can be said of all small fruits.

It is doubtful if there is a better all round fruit region in the whole country than this. Even Californians admitted to me that this was ahead.

Going back, east from the Columbia, across the ribbon just described, you come to the vast retaining wall which the river has made by cutting its way down through the solid rock, two thousand feet from its ancient bed on the surface of the great plateau, during the thousands of ages it has been at work. The margin of this table land is, in some places not more than two miles distant—sometimes much less than that, on a level as surveyors measure, but you must find some canyon that divides the bluff and goes zigzagging at a very steep incline for five miles up to the prairie above. Here you enter a different and much colder climate. The greater altitude, the freer sweep of the winds, and the proximity of snow-capped mountains which half encircle it, all tend to reduce the temperature and lengthen the winters. Throughout Washington it is quite noticeable that climate is determined more by altitude than by latitude. Notwithstanding this fact, the winters here are not severe. The snows are heavy, but the Chinook winds soon melt them, and the water soaks into the ground to give the spring sowings an early start.

In moving these five miles, our list of products grown must be altered to meet the new conditions. The peaches, apricots, nectarines, sweet potatoes, watermelons, tomatoes, peanuts and squashes must nearly all be eliminated when this altitude is reached, but there are many compensations. The mountain air is pure as the crests of snow across which it blows. There is more ozone in it, more energy in the people. The soil is richer and more retentive. It will yield good crops of apples, pears, plums, prunes and cherries, though it cannot be irrrigated. A few favored spots will give quinces, apricots and even peaches, but these are unreliable.

The quality of the fruits that are grown is nowhere excelled. The amount, too, that is carried by each tree is something once seen never to be forgotten. Take one glance at those pear trees lowing in the afternoon sun with their wealth of sumptuous, tempting specimens, all of which would have been a grand show lot for any county or even state fair east of the Rockies; take but a single glance at it, and the image of that tree will never be wholly obliterated.

There is a region of country containing at least a million acres along the Columbia below Wenatchee, commencing near the point where the

Great Northern crosses the river, which is probably just as good fruit land as any in the state of Washington, but it has a very forbidding appearance now, from the fact that there is not a spring or brook or even a well on the entire tract. It lies but two hundred or three hundred feet above the level of the river and is easily within reach of irrigation. Given plenty of water, the price would rise from less than a dollar an acre to a hundred dollars an acre. The only question first to be solved is whether there be any reason that does not appear on the surface why this land will not produce as good and as much fruit to the acre as poorer soil above Wenatchee does. A two years' test of a few rods watered by teams would determine this point.

(To be followed by an article on Methods of Cultivation by the same author in an early number.)

DRAWBACKS TO BLACKBERRY CULTURE.

THOS. REDPATH, LONG LAKE.

There are some drawbacks to success in blackberry culture in Minnesota. The canes grow very strong and are full of briars, which makes them hard to handle, and it is difficult to lay them down and protect them for the winter. This keeps a great many people from planting them. We cannot expect to make a success of growing blackberries unless we give them winter protection. I have tried covering them with hay and straw, but it is not satisfactory, as the mice will damage a great many canes during the winter. The only successful way is to cover them entirely with dirt, and it is the cheapest, because it is right where we want it.

Also they must have thorough cultivation from the time we uncover them in the spring until we commence picking the fruit. I think the blackberry needs more thorough cultivation than any of the other small fruits, as they are the last to ripen their fruit, and, as a general thing, it is pretty dry weather.

With me the blackberry is the most profitable of all the small fruits. The yield is more to the acre, and when marketed the returns are more satisfactory, the market never being overstocked. Of course they require some extra labor, such as wiring and tying them up every year, but if given proper winter protection and thorough cultivation until the fruit commences to ripen success will be ours, and we shall be well repaid for all extra work given them.

Mr. Latham: How many acres of blackberries have you?

Mr. Redpath: I had three-fourths of an acre, and I grubbed out half an acre; I found I could make as much from a quarter as from three-quarters of an acre. (Laughter and applause.)

Mr. Latham: How would it do to cut that down to an eighth of an acre?

Mr. Redpath: I don't know how that would do. I cover them all over in the winter with strawy manure; I did not have enough to cover three-fourths of an acre, but I can get enough to cover a quarter of an acre.

Mr. Wright: Does not straw bother you in cultivation?

Mr. Redpath: I first harrow it, and after that it does not interfere.

Mr. Elliot: I want to say that the berries he grubbed out were the Stone's Hardy.

Mr. Yahnke: Well, I would grub those out too. (Laughter.) I want to say a little more about drawbacks. About fifteen years ago I had a piece of ground that brought me more money than all the rest of my land. The berries stood on that patch seven years, and I covered them seven years, covered them with dirt every year, so I thought I would help them by manuring them. My neighbor said I would spoil them by manuring, but I said if I could spoil anything by manuring I would not have it. My neighbor was right; I killed them all. I don't know that the manure killed them, but I know they are dead. (Laughter.) After that we did not have good crops; I don't know whether the manure was to blame or what it was; it may have been in the soil. But I say now what I have previously said, that drouth is the greatest enemy of the blackberry. On the other hand, I do not believe blackberries can stand wet feet either. (Laughter.) I know Mr. Underwood said the other day that clay soil was the best, and I agree with him that a good soil with a clay subsoil retains the water the best. If we have got a good location the main thing is to get good plants, and I would never advise any one to set plants from an old plantation. That is a serious drawback.

Mrs. Kennedy: In Pennsylvania we used to go on the mountains to get our blackberries, where they were high and dry, but they grew on clay soil where nothing else would grow, and we picked larger blackberries there than any I ever saw in this state. Now where is the trouble?

The President: Any springs?

Mrs. Kennedy: I never found any springs up there.

Mr. C. O. Woodruff: I would like to hear from those men who raise blackberries as to whether there is any difference in planting them on a slope, north or south or east or west. Perhaps we have not all got land that is suitable so far as the slope is concerned.

Mr. Harris: The north slope is the best on my place.

Mr. Yahnke: I would prefer a northeast slope in preference to a southern.

Mr. Underwood: Is it not simply that the northern slope furnishes more moisture? I admit they need a certain amount of moisture, but you cannot make me believe they need a swamp. With a northern exposure there is less evaporation, but if you do not have such a slope the next best thing is to give thorough cultivation. I like Mr. Wright's paper until he says he plows over

his blackberries. My experience is that there is more injury done to the roots by plowing, and they suffer the next year, and I find it does not pay to cover raspberries and blackberries with the plow in our soil. We had to discard the plow entirely and cover with the shovel. It pays to do it and then give them thorough cultivation —and in that work we can save a great deal of labor and expense. In uncovering simply take the dirt off the vines and take them up, then leave them alone, having put on all the coarse manure they will stand, until the weeds commence to start, about corn plowing time, then go in and pull down the ridge around the plants and cover up the coarse manure. In that way you save a lot of expense of cultivating—but in dry weather keep the ground stirred thoroughly to prevent the evaporation of moisture.

Mr. Wright: In shovelling how deep do you dig?

Mr. Underwood: It does not take much to cover them; it does not disturb the roots.

The President: Do you take it out of the middle?

Mr. Underwood: Yes, we take it out of the middle. The plow goes too deep. We followed that plan for several years, but our vines did not do well.

Mr. Wright: If you put on a team that walks slowly you can handle the plow so it will not go deeper than three or four inches, and if you keep a foot and a half away from the hill it will not disturb the roots any more than if you dig the dirt out of the middle. I have noticed the work of those who cover with the shovel, and they dug up more roots than I ever did with the plow.

Mr. Underwood: After we have laid them down and put the dirt on them it is cheaper to cover them entirely with the shovel than it is with the team.

Mr. Widger: I do not use the plow or shovel either. We use a six-tined short handled fork to handle the dirt with. It is light and easier worked, and we also use the spading fork. I hate to go in with a shovel.

Mr. Smith (Wis.): In reference to blackberries growing wild, I want to say something in line with what Mr. Philips said, that on pine lands and where it is somewhat mixed with hardwood, in our vicinity, at Green Bay, there were immense plants of wild blackberries growing. The best fruit was most always found on the sides of ravines, which were plentiful there. Along the side of the ravine about half way down, acting as an underdrain, it is more moist than either on top or further down. There we got the best blackberries, the bushes frequently growing from six to eight feet high and bearing very large and fine fruit. Down at the bottom, where

it was swampy, we found a stray bush now and then and a few raspberries, but the blackberries would not grow on swampy ground.

Mr. Sherman (Iowa): There is one drawback that I have not heard mentioned here; that is, obtaining healthy stock. Many plantations are failing on account of root-killing. The plants are not doing well, and if you will examine the roots you find them covered with knobs as big as your thumb, and such plantations are worthless. In regard to soils, with us we regard a medium position the best. We think we have to have a moist soil, but we do not want a wet one. We can put them on hill tops or on side hills or on well drained swamp lands if we can depend on plenty of moisture, and we will make a success, but if we fail on getting that we are pretty sure to make a failure.

Mr. Towner: I would like to ask Mr. Underwood when he puts his mulch on and what he uses.

Mr. Underwood: Right now is a good time to put it on.

Mr. Towner: Does it not bother you in cultivating?

Mr. Underwood: As I said before, in the spring of the year we do not do anything with the ground until everything else is out of the way and taken care of. We raise the vines out of the ground and let them go, and then when we get time we rake the soil down on this mulch in the middle of the row the mulch has become more or less decayed by the winter snow and rains, and we never see anything of the mulch after that. We do not put on enough so it will bother. It helps to cover the ground and fertilizes it as well and keeps the ground moist, and it improves it in that way more than the ordinary way of mulching does. If covered up with dirt it decomposes by the time we want to cultivate and is out of our way entirely. It saves us much expense. We used to have an idea that we must take hooks and rakes and level the ground down, and some of our men knew how to do the work so well that they made the ground look as some of those old gardens used to do; they thought the ground must be level to make a nice bed for weeds to grow—and in our case by the time we got to one end of the row the weeds would have to be pulled again at the other end, and I discovered it was time to use a different method. We get just as good results and save lots of labor.

Mr. Widger: How long will it take two men to cover an acre?

Mr. Underwood: We have that fact figured out at home, but I have forgotten. We start to cover very early, let the men work along, and it does not seem as though it took very long, but I could not answer the question without referring to our records at home.

Mr. Elliot: How early do you cover?

Mr. Underwood: In September.

Mr. Elliot: Before the leaves are off.

Mr. Underwood: Yes, we commence in September; we have so much to do that we could not complete it all if we left it until later. We always have the same men to do the work, and they are accustomed to it, so it is an easy matter to cover the berries in that way.

Mr. Haggard: If you leave the earth against the plants until the leaves begin to start and then level the rows, does it not destroy the next year's sprouts?

Mr. Underwood: It does not hurt them a particle.

Mr. Busse: Has any one had any experience in irrigating or watering blackberries during the fruit ripening season?

Mr. Jewett: Our irrigating system extends over a very limited time and a small area of land, about one-eighth of an acre. Last year we did not get crop enough to pay for picking, but this year we had some means of irrigating, and at the proper time we put the water between the rows. We got a good crop; I cannot tell you how much we got, but it was very satisfactory. So we have made up our minds that irrigation is going to pay us much more than the plants we set this year, and another year if the weather is dry we shall be prepared to put the water on them. We have a windmill to conduct the water. We conduct the water four or five hundred feet through hose that is made of common duck. We split the duck in three pieces and then turn it wrong side out and sew it on the machine, run it through boiled linseed oil and roll it through a wringer, and then go through that process a second time. It has lasted three years, and while it lasts it makes a good pipe. We pump the water between our apple rows, and we use a trough two rods long with holes bored opposite the rows. We let the water run into the trough and out of the holes into the rows, and when we want to water another area we move the trough along and water something else. It is not much of a job, it takes two men to lift the pipe and carry it along.

Mr. Smith: How far do you lift the water?

Mr. Jewett: Wind is cheap, and our pump will throw a barrel of water in five minutes. Next year we expect to have one of those motors, a gasoline motor. We propose to have plenty of water, and we are going to have a motor to pump more water.

Mr. Wedge: How deep is your well?

Mr. Jewett: Our well is a lake three miles long. (Laughter.)

Mr. Secor (Iowa); Would your water be as good as lake water?

Mr. Jewett: It is simply the water from the lake. We dug a well near the shore, and the water seeps through. I do not think cold water makes any difference. I will be better prepared another year to talk about the success of irrigation.

Mr. Smith (Wis.): We have for a number of years used water from an artesian well nine hundred feet deep, while my brothers used water pumped from a lake, and I have been unable to see that the warm water they pumped out of the lake was better than the cold water we got out of the bowels of the earth. The water we get stands at a temperature of from 52 to 55 degrees, and it answers the purpose in every respect.

Mr. Jewett: I think it was in the American Gardener I saw an article describing a test that was made in a scientific way in a greenhouse of cold and hot water, and the result was satisfactory either way.

HOW TO PRODUCE THAT $1,000 PREMIUM APPLE.

PROF. N. E. HANSEN, BROOKINGS, S. D.

The recent offer of the Minnesota State Horticultural Society of a premium of one thousand dollars to any one who can produce a variety of apple equal to Duchess in hardiness, the Wealthy in size, appearance and quality, and the Malinda in keeping capacity, has no doubt stimulated effort in the line of raising seedlings and of bringing to light old seedling trees now perhaps growing in some out-of-the-way place, neglected and in heavy sod. If any one knew positively just how to produce such an apple, it is very likely that he would not give the secret to the world until his seedling apple had secured the prize. But as it is so delightfully uncertain a subject, and no one knows just how to produce the variety desired, it will perhaps be of interest to discuss some of the various methods that will be worth trying. The writer has several hundred candidates for the honor, now one and two years old (the winter of 1898-99 wiped out nearly two hundred more), but in my opinion some of the older members of the society will be in the field long before with some of their older seedlings.

In my opinion, the winter referred to settled one point, and that is that the roots of young trees of no variety of the cultivated apple now known will stand forty degrees below zero with the ground dry and bare of snow. I learned that even seedlings of the Hibernal, which is probably the hardiest known type of the cultivated apple, and seedlings of Antonovka, Anisim, Duchess and other hardy varieties, are not proof against root-killing, at least when they are only two years old. It is too severe a test for seedlings of the cultivated apple. Since that time, although I have by no means lost any enthusiasm in this work, young seedlings have been carefully mulched. The tops must be hardy enough to stand any winter. If not, the brush pile is not far away. I am inclined to the opinion that apple seedlings should be protected for a considerable number of years, if indeed it will ever be safe to dis-

pense with it in regions where the severest freezing is apt to come when there is no snow on the ground, which is often the case in the Dakotas and most of western Minnesota. In Russia the Russians themselves have been forced to go entirely outside of their own apples to find a stock proof against root-killing, and have found it in the pure Siberian crab (Pyrus baccata). In cultivation this is represented in Minnesota and other parts of the northwest by the old Yellow Siberian, Red Siberian and Cherry crabs. The deciduous calyx distinguishes it from the hybrid crabs, such as Transcendent, which have a persistent calyx. Small one-year seedlings passed safely through the winter of 1898-99 at Brookings. Last year a few were budded to several standard apples and have made a strong growth this summer. There is no dwarfing effect in the nursery. I am glad to know that some of our progressive Minnesota nurserymen are testing this method of propagation, and we will soon know its value for American conditions. My present opinion is that piece-root grafting will soon have to be abandoned over a large part of the northwest. A writer in the Wisconsin Horticulturist speaks of losing apple-root grafts four years in succession from root-killing. Then what about the planters who plant trees in regions where the severest cold of the winter often comes when there is no snow on the ground? It would be a blessing in disguise if root-killing winters would come oftener.

So let us not put our apple seedlings to too severe a test and expect them to have a hardy top as well as a hardy root. Mulch.

The coming apple for the northwest, so earnestly sought for by all, will probably have in its make-up the blood of both American and Russian apples and, probably, the Siberian crabs. The further north we go, the more the Russian blood will be in the ascendancy. At the extreme northern limits, say in parts of the Canadian Northwest, the Siberian blood will necessarily prevail. For a large part of the northern Mississippi valley, which some began to whisper is not a winter apple climate, it may be necessary to include the native crab, as that is most certainly a winter apple. By the term "American apple" is, of course, meant seedlings raised in America from varieties originally brought over from the milder climate of western Europe by the early settlers. Before that time the Indians had tasted no other apple than the native crab. Some think that it would have been a good thing had it proven impossible to import the cultivated apple, which has been cultivated from prehistoric times in Europe and Asia, because then the native apples of this continent would have received attention and have ere this given rise to varieties suitable for cultivation. However, their natural range is far short of the possible limit of the Russian and Siberian types, so that a considerable part of the prairie northwest in that case would have been without apples of any kind. De Candolle in his noted work on "The Origin of Cultivated Plants" states that the northern limits of wild species "have not changed within historic times, although the seeds are carried frequently and continually to the north of each limit. Periods of more than four or five thousand years, or changements of form and duration, are needed apparently to produce a modification in a plant which will allow it to support a greater degree of cold."

We all have had illustration of this in planting southern seeds of trees alongside of seeds of the same species from northern sources. Northern red cedars are perfectly hardy; those from Tennessee, for instance, winterkill badly. Hence, we should strive to use the hardiest known type of the

apple in our apple breeding. The apple is indigenous to a considerable part of European Russia, and this explains why Russian apples as a class are more resistant to cold. By cultivating them in regions where hardiness is the first essential, we simply take advantage of nature's work of several thousand years in plant acclimation. However, we want long-keeping capacity as well—also the effect of the longest period of cultivation under the care of skilled fruitmen. For example, the Newtown Pippin, Jonathan and Grimes' Golden. They probably represent the highest point in evolution the apple has reached under the hand of man. But in refining the fruit, hardiness and ability to care for themselves under unfavorable conditions have been lost. If possible we should try to grow seedlings combining the hardiness and freedom from scab of the hardiest Russians, such as Hibernal, with the choice quality and long-keeping capacity of the choicest Americans, such as those just mentioned.

This leads to the thought that the coming apple will very likely be raised from seed saved in the orchard of some one of our horticultural veterans, such as C. G. Patten, J. S. Harris, E. H. S. Dartt or R. P. Speer, where a large number of varieties of both races are grown. In his experimental orchard Mr. Dartt, if I remember rightly, has industriously gathered together something like 800 grafted varieties, besides several hundred seedlings of his own. Hives of bees kept in such an orchard would help greatly in the work. The pedigree of the seedlings would be unknown at least in part, but the apple if hardy would manage to get along very well without any. Seed from Mr. Patten's orchard, containing, as it does, seedlings of seedlings of the Duchess and other hardy varieties, ought to give the desired variety, if indeed it is not already in existence among the multitude of new seedlings coming on at Mr. Patten's place.

In all our discussions about American apples, let us not forget that all were originally imported either from west or east Europe. The only true American apple is the wild crab.

Many half-hardy and tender varieties of the apple can be grown in a limited way much farther north than is usually supposed by top-grafting upon hardy stocks. In the spring of 1897 on the college grounds at Brookings, a number of choice American varieties of the standard apples, and some large-fruited varieties of the wild crab, were top-grafted in the old orchard, planted in 1888. This year I gathered some Grimes' Golden from a Hibernal tree, and some Ben Davis from a tree of Gideon's seedling crabs. To be sure, a severe wind storm in August blew off the fruit prematurely, but the seeds appear plump, as a rule, and have been carefully saved. A test top-killing winter, like that of 1884-85, will freeze off all the tender grafts down to the point of union with the hardy top, but in the intervals we can very likely secure fruit. In my visit to Mr. Peter M. Gideon in the fall of 1898, he told me that he had this plan in mind for some years and had sent to Missouri and elsewhere for late winter varieties and had top-grafted them into the top of hardy varieties. This orchard should be most carefully looked after by this society, and every seed saved, at least from the late-keeping varieties. Mr. Gideon said that a seedling in his experience was apt to be of about the same season as that of the parent from which the seed was saved.

Mr. Clarence Wedge recently reported raising some fine Grimes' Golden from top-grafts. Every seed should be sown. We are sure of one-half of the

pedigree. The other part may be Hibernal, Duchess and Charlemoff. The one thousand dollar premium apple may be in one of those Grimes' Golden. At two or three of the Minnesota state fairs I have noticed a seedling of the Transcendent crab raised by Mr. J. S. Harris. The apple was of good marketable size and a true winter keeper. Mr. Harris thought it was of no value owing to blight and said he would cut the tree down. This fall I was glad to hear that the tree would be spared. Seed from such a tree should be saved. The point I wish to make is drawn from the history of other fruits and flowers, and that is, if a hybrid or crossed plant is not wholly satisfactory its seedlings may be just what is wanted. A hybrid, or cross, in other words, is to be regarded in many cases only as an intermediate step in the process of evolution.

In all the foregoing, crossing has been mentioned as the method most likely to give the desired results. But there is danger in introducing tender blood for sections where even the hardiest have enough to do to survive. Stock-breeders often in-breed to fix types. Why not try in-breeding with the hardiest apples, such as Hibernal? Possibly a seedling much similar in fruit but later in season might be obtained. The late Mr. Peffer, of Wisconsin, stated that a variety fertilized with its own pollen would come nearer true to seed. It might help us to get a Hibernal that would keep till June. What would Minnesota give for a Wealthy that would keep till June? The numerous seedlings of the Wealthy now appearing at the state fair show a decided prepotent tendency in the Wealthy in form and color.

To breed an apple that would come wholly true to seed would take many generations and would be a useless undertaking, even if it proved possible to accomplish the work.

Selecting the parents, one for hardiness and the other for quality of fruit, and crossing them by careful hand work, using forceps, paper or muslin sacks and a camel's hair brush, should be tried by all who have the time and inclination and the necessary knowledge of the parts of a flower.

But after all, some passer-by may throw a core into a fence corner or a bird drop a seed in some neglected spot that will produce a seedling excelling the best product of the hybridizer's skill. However, while not neglecting the sowing of all the seed of desirable varieties that I can get hold of, especially those shown for premiums at state fairs and horticultural society meetings, I prefer to breed as many apples as possible with a known pedigree. Such work will serve to throw light on certain problems in plant-breeding, as well as proving the means, perhaps, of giving us the apple for which we are all seeking.

At Brookings the sending south for pollen has proven to be disappointing work, as has also the working with apple blossoms in the unfenced and much exposed college orchard. Late frosts have also destroyed the work at times. Hence a new departure has been made in the past three years in the breeding of hardy apples, plums and other fruits by growing them on dwarf stocks in pots and boxes in order to secure early fruiting and better control of climatic conditions at the time of blossoming. In my first trip to Europe in 1894, I was much interested in the pot culture of orchard fruits in the open air and under glass in the palace and experimental gardens for the purpose of raising fancy fruit, and these methods were studied with the view of applying them to the work of breeding hardy fruits. In the winter of 1896-97 a number of Paradise apple stocks were imported from Germany, and in the fall of 1897, under directions I sent from abroad, these were

budded with such varieties as Hibernal, Wealthy, Duchess and Longfield. In the spring of 1899 trees of leading American varieties were secured from an eastern nursery. At present 135 trees, growing in boxes, all of apples on Paradise stocks, are on hand. Some interesting results have been noted. Wealthy blooms at two years from the bud, that is, buds inserted in the fall of 1897 blossomed in the spring of 1900, in the beginning of its third season of growth. This fall I picked a few apples of Wagner and Baldwin crossed with Hibernal pollen, and would have picked at least a score more had the boxes been better protected at first from volunteer pickers. I hope that a legislative appropriation will permit the building of an "orchard house." The boxes are put in the cellar over winter at present, but an orchard house would be better. The trees already in boxes or ready to put into boxes include, beside American and Russian apples, also Siberian and hybrid Siberian crabs, large-fruited native crabs, red-fleshed apples from Turkestan, seedless apples, dwarf and other forms of the apple from various parts of the world.

The red-fleshed apple bears the formidable name of Pyrus Malus Niedzwetzkyana. It has red flesh, red cambium layer (no substitution with such an apple), dark red bark, and the young wood and leaves are red. I met Mr. Niedzwetzky in northern Turkestan at Vernoe, near the Chinese border. He is a lawyer, an exile and an enthusiastic amateur horticulturist. The apple was found by him in the high mountains between China and Russian Turkestan. He had already sent it to Europe to Dr. Dieck, of Germany, who sent it to L. Spath, also of Germany, from whose nursery I had already imported it in the winter of 1896-97. These I lost by root-killing in the winter of 1898-99, but I have secured it again. The fruit is about the size of Whitney and an all winter keeper. I fear its hardiness, however, and do not deem it of value except for plant-breeding. I encountered this red-fleshed race of apples in other places in Turkestan, especially at a horticultural school in Turkestan north of Kashgar in Chinese Turkestan. The red color of the young wood under the knife is very characteristic.

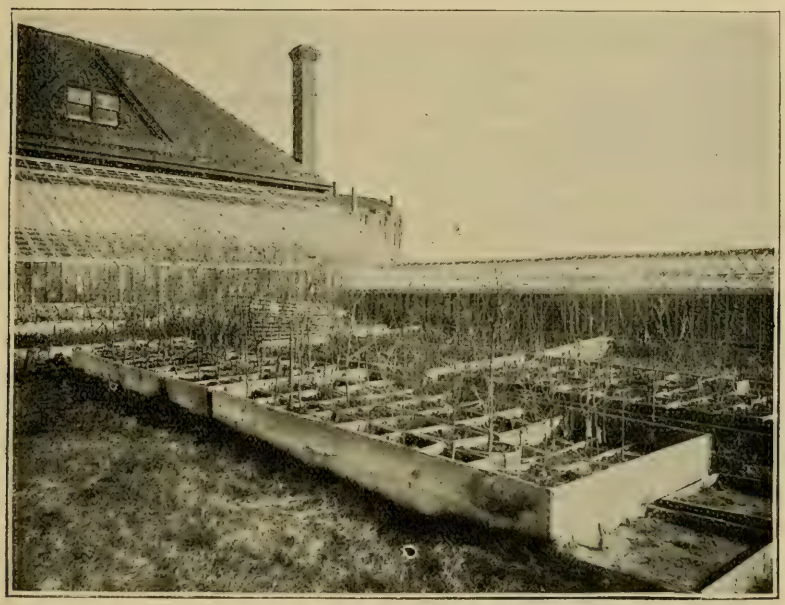
Besides the 135 apple trees in boxes, the inventory this fall shows 108 boxes and pots of other fruits, including plums, pears, peaches, Prunus Simoni, mulberry, filbert, almond, spineless and other gooseberries, currants, grape and oleaster.

The frames shown in the photograph show some of a number of frames used as nurseries for wild plants until they attain sufficient size to trust them out in the field. My inventory of seedlings this fall raised on the grounds at Brookings in the past two years shows over 27,000 seedlings of native fruits. But this subject will be treated in another paper.

As to methods, all small lots of seed are now sown in flats and transplanted into beds in the garden as soon as large enough to handle. It is still better to transplant into 4-inch pots and later to the field. Not a seed is lost with proper care, and the festive and ubiquitous cutworm is robbed of his prey. Larger lots are sown in beds or nursery rows. Transplanting the first season is the common method of European nurseries, and I find here that it gives a finely branched system of roots. The root-pinching at time of transplanting breaks up the tap-root. A large lot of Pyrus baccata seedlings was raised this season in this way. Owing to very dry weather immediately after transplanting they were checked in growth, but they are well rooted.

To hasten bearing, buds can be cut the second or even the first summer and budded into the top of a bearing tree. The first year's top can

also be used as a scion for top-grafting. German writers say that a seedling if grafted with itself, that is, the scions cut off and grafted right back on to the same tree, will bear earlier than if left alone. This method I have never tried. Dwarf stocks, if properly mulched, would probably prove useful. Mr. Dartt prefers girdling. This may do for side limbs but not for the whole tree. Last year I tried girdling at Brookings, having been favorably impressed with what I saw in Mr. Dartt's orchards the preceding fall (1898). But I find this year that, while girdling certainly has a decided effect in causing early bearing, it is too severe a blow at the life of a tree in this section. When even Virginia and Whitney crabs fail to stand the test of girdling it will be safer to try other methods, or at least to girdle only small limbs that can be spared without killing the tree.



A Plant Breeding Establishment at the Agricultural College and Experiment Station, Brookings, S. D.

Nursery propagation is a necessary test for hardiness. A very large number of seedlings of the apple, which has been brought to public notice in the past generation in the northwest because of the hardiness of the original tree, have quickly dropped out of sight again because the trees failed under propagation in the nursery. Our occasional test winters, such as those of 1872-73, 1884-85, and 1898-99, must be taken into account. Some trees thrive when young but succumb when they come into bearing. Hence the true value of any seedling can only be determined when it has come into bearing as a grafted or budded tree and has passed safely through a test winter.

So do not be too enthusiastic over any new seedling until it has been propagated and put into orchard.

In this work "learn to labor and to wait."

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ORNAMENTAL PLANTING.

GEO. W. STRAND, TAYLOR'S FALLS.

Did you ever pass by a place and remark, or hear strangers speak, about the beauties of a certain vicinity? The traveling public particularly, and all persons in general, when brought into such a position prove the truth that there are few who do not appreciate the beauties of nature in their surroundings. To a great extent we measure the prosperity and height of civilization of a country or community by the homes of its people.

Although means may do much towards beautifying a place, it is lack of something else that leaves it barren and uninviting.

It is a general failing among the majority of people, to fall into a rut and not make any great effort to get out, or even seriously think that there are better or higher things to strive for. In rural districts, next after obtaining an existence the home receives the attention, and following closely or directly with this comes the above problem.

Experience is the best teacher, but we can learn much of value, if we choose, by observation and from that of others.

After planting the windbreak or grove, as we near the inner side come the opportunities for more judgment in arrangement and taste, and then in the decorating of interior grounds. The endeavor on this hand is to break up that harsh or set appearance by using smaller and more graceful species; for as the grove grows taller, they hide the bare trunks of the tree, make it more impenetrable and also liven up the landscape. Such trees and shrubs as white birch, golden willow, wild plum, buffalo berry, highbush cranberry, choke cherry, etc., will all work in to advantage here. They should be planted quite thickly, some one of the varieties predominating in each place —not using too many different varieties in a place.

Closer to the buildings we can use flowering shrubs, such as lilacs, hydrangeas, spireas, barberries, snowballs and many other such hardy species. Clumps should be made of these also, using the taller growing ones in the center, where height is not objectionable.

Have the Garden Near the House.—I find that having the garden handy is a very convenient arrangement. Heretofore such gardening as I attempted was carried on at a distance of about 80 rods, and I know of others doing the same. The time lost in going back and forth would go a long way toward cultivating if the garden were close by. And when vegetables could have been had they were often gone without rather than make the trip after them.

Cold Frames.—The principal point to be observed in the management of cold frames, whether for wintering vegetable or flowering plants, is to keep the plants dormant, not growing. Beginners are very apt to keep them too warm. Cold frames should be examined very frequently during winter and opened even when the outside temperature is below freezing. This ventilation is best given by sliding down the sashes from the back, and when the temperature rises above the freezing point they should be taken off altogether. There is far more danger in keeping cold frames too warm than too cold.

PROGRAM ANNUAL MEETING,

Minneapolis, Dec. 4-7, 1900.

ANNOUNCEMENT.

The annual meeting is to be held this year in the lecture rooms of Plymouth Church, located on the corner of Nicollet avenue and Eighth street. These rooms are especially well adapted to our purpose, the main room being sufficiently large for all the sessions and the evening lectures, with adjoining rooms for the fruit display which are both commodious and well lighted. There are also other rooms well adapted to the meetings of the societies that affiliate with us and which meet at the same time and place. These rooms are all on the ground floor, and are reached from the street on either side of the building.

A fine fruit exhibit is assured, and we have reason to expect the largest attendance we have ever had. Representatives from societies in adjoining states will meet with us, and other horticulturists of note will add to the interest of the gathering. Among these are Prof. N. E. Hansen, of the South Dakota Agricultural College; Prof. C. B. Waldron, of the North Dakota Agricultural College; Prof. E. S. Goff, of the Wisconsin Agricultural College; C. G. Patten, of Charles City, Iowa; President C. F. Gardner, of the Iowa Horticultural Society; C. L. Watrous, President of the American Pomological Society and J. S. Trigg, of Rockford, Iowa.

Hotel Vendome, 21 South Fourth street, (between Nicollet and Hennepin aves.) has, for the fourth time, been selected as headquarters of visiting members and friends, and special rates secured of 50 to 75 cents per day of one in a room; two in a room for 75 cents to $1.00 per day. One of the best popular priced restaurants in the city is located on the ground floor of this building. Register as "horticulturists," and you will be well treated. A very comfortable and pleasant hotel, with all modern conveniences, only one-half block from our secretary's office and library, in the Kasota Block, and four blocks from place of meeting.

The Minnesota State Forestry Association.

This association will hold a joint session with the Horticultural Society on Thursday afternoon. (See program on page 10.)

A business session is also announced to be held at 1:00 p. m. Thursday, in some room to be announced at that morning's session of the Horticultural Society. All members are urged to be present. For reduced railroad rates, see paragraph below.

Minnesota Bee-Keepers' Association.

The officers of the Minnesota Bee-Keepers' Association announce that the annual meeting of that society will convene Wednesday, Thursday and Friday, December 5, 6 and 7, at the same time and in the same building as the Horticultural Society. See program within.

For reduced railroad rates see paragraph below.

The Woman's Auxiliary.

This society will hold its annual business session on Thursday at 3:30 p. m., in some room in the building to be announced at that afternoon's session of the Horticultural Society. All ladies interested in horticulture are earnestly invited to be present and connect themselves with this association.

REDUCED RAILROAD RATES.

TAKE NOTICE.

Those attending either the Minnesota Bee-Keepers' Association, the Minnesota State Forestry Association, the Woman's Auxiliary or the Minnesota State Horticultural Society should all secure certificates from the railroad agent where the ticket is purchased, stating that fare has been paid from that point to Minneapolis. Do not fail, also, to get a similar certificate at each railroad transfer point where you may have to purchase a ticket en route.

These certificates should all be handed to Secretary A. W. Latham, of the Horticultural Society, at the earliest opportunity after reaching Minneapolis. They will be signed good to return for one-third fare Dec. 7th and for three days thereafter.

DON'T FAIL TO GET A CERTIFICATE.

Come, *everybody* interested in any branch of horticulture! It is *your* loss if you stay away.

W. W. PENDERGAST, President,
Hutchinson.

A. W. LATHAM, Secretary,
207 Kasota Blk., Minneapolis.

PROGRAM.

TUESDAY MORNING SESSION.
9:30 o'clock.

Invocation.

MUSIC—In the Starlight, Josephine Caroline Brayton.

Greeting by President W. W. Pendergast.

Appointment of committee on credentials.

General Subject—Mechanical Preparation of the Soil in Fruit Culture.

EIGHT TOPICS.

1. Subsoiling as a Preparation for Fruit Culture,
   David Secor, Winnebago City.
   Frank Yahnke, Winona.
2. Methods of Plowing as a Preparation for Planting Fruits, Prof. Wm. Robertson, St. Anthony Park.
3. Manipulation of the Soil as a Protection from Drought and Winter-Killing,
   G. D. Taylor, Fulda.
4. Manipulation of the Soil Necessary or Profitable for a Plum Orchard, Dewain Cook, Windom.
5. Operations in Working the Soil in Growing Raspberries and Blackberries,
   W. S. Widmoyer, Dresbach.
6. Movement of the Soil in the Successful Vineyard,
   C. W. Sampson, Excelsior.
7. Tools for Garden and Orchard Use,
   S. D. Richardson, Winnebago City.
8. The Campbell System of Overcoming Drought, and Its Value, O. C. Gregg, Lynd.

Renew your membership or become a member by paying the secretary $1.00.

TUESDAY AFTERNOON SESSION.

2 o'clock.

General Subject—Distribution and Conservation of Moisture in the Soil.

FIVE TOPICS.

1. Drainage of Marsh Lands and Their Uses in Gardening, W. L. Taylor, Litchfield.
2. The Use of Drain Tile in the Garden and Orchard, R. A. Wright, Eureka.
3. Methods of Mulching and Their Comparative Value, J. S. Harris, La Crescent.
4. The Dust Mulch and Its Preparation and Care, W. W. Pendergast, Hutchinson.
5. Irrigation in the Minnesota Garden and Orchard, R. H. L. Jewett, St. Paul. P. M. Endsley, Minneapolis. C. W. Spickerman, Excelsior.

MUSIC—Violin Solo, Arthur Thurston.

General Subject—Rotation of Crops on the Fruit Farm.

FIVE TOPICS.

1. Supplementary Plantings in the Orchard and Their Rotation, O. M. Lord, Minnesota City.
2. What Can Be Planted to Advantage with the Raspberry, Strawberry and Blackberry. M. Cutler, Princeton.
3. Use of the Strawberry Field after Plowing and before Resetting, John Eklof, Stockholm.
4. Rotation in the Vegetable Garden, Prof. W. M. Hays, St. Anthony Park. Vincent Reeves, Champlin.
5. General Rotation of Planting on the Small-Fruit Farm, C. W. Merritt, Homer.

Appointment of committees on award of premiums, president's address, obituaries and final resolutions.

WEDNESDAY MORNING SESSION.

9 o'clock.

General Subject—Propagation of Plants.

ELEVEN TOPICS.

1. Nursery Culture of the Apple, J. P. Andrews, Faribault.
2. Plum Culture, L. Z. Smith, Mankato.
3. Raising Plants of the Raspberry and Blackberry, A. M. Shepherd, Minneapolis.
4. How to Grow Gooseberry and Currant Plants, G. W. Strand, Taylor's Falls.
5. Growing Strawberry Plants for Resetting, E. F. Peck, Austin.
6. Propagating New Varieties of Tree Fruits from Seed, C. G. Patten, Charles City, Iowa.

   A talk on the above subject, C. L. Watrous, Des Moines, Iowa.

MUSIC—The Last Rose of Summer, Mrs. R. N. Parks, Johnson School of Music.

7. Growing New Varieties of Small Fruits, J. C. Kramer, La Crescent.
8. Growing Half-Hardy Fruits, J. R. Cummins, Washburn.
9. Plant Breeding, Prof. N. E. Hansen, Brookings, S. D.
10. Growing Evergreens from Seeds, and After Care in the Nursery, Clarence Wedge, Albert Lea.
11. Growing Plants in and for the Windbreak, Alfred Terry, Slayton.

WEDNESDAY AFTERNOON SESSION.

1:30 o'clock.

Joint Session with the Minnesota Bee-Keepers' Association.

SONG—Little Miss Ethel Acklin, St. Paul.

1. Bees and Horticulture—Their Relations Mutual, Dr. L. D. Leonard, Minneapolis.
2. Something of Interest to Bee-Keepers and Horticulturists, J. P. West, Hastings.

2:30 o'clock.

The Ladies' Auxiliary—Joint Session.

PIANO SOLO—A. H. Rudolphi.

READING—Miss Fay Latham.

1. Country School Grounds, Miss Lucia E. Danforth, Carleton College, Northfield.
2. We Want a National Flower, Mrs. Henry F. Brown, Pres. Minneapolis Improvement League.
3. Effective Improvements in the Home Grounds with the Smallest Expenditure of Money, Roy Underwood, Lake City.
4. Outdoor Improvement Work of the Woman's Civic League of St. Paul, Mrs. Conde Hamlin, President.
5. Agriculture in Our Rural Schools, Prof. W. M. Hays, State Agricultural School.
6. The Forest Reserve, Prof. Maria L. Sanford, State University.

WEDNESDAY EVENING SESSION.

8 o'clock.

A TALK—The Flower Buds of Our Fruit Trees,
Prof. E. S. Goff,
Wisconsin Agricultural Experiment Station.

8:30 o'clock

Illustrated Address.

My Impressions in Europe, by Prof. S. B. Green,
Minnesota Agricultural Experiment Station.

Prof. Green spent the past summer in Europe and the illustrations shown are very largely from photos taken by himself.

You can become a life member by payment of $10.00, in two **annual payments of $5.00** each if you prefer. This will entitle **you to a file of our** bound reports, a library in itself.

VISIT OUR LIBRARY

DURING THE MEETING.

207 Kasota Block, Corner 4th Street and Hennepin Avenue.

It will be found open and lighted evenings during this meeting. All are welcome.

THURSDAY MORNING SESSION.

9 o'clock.

A VERY IMPORTANT SESSION.

General Subject—Annual Reports.

President's annual address,
W. W. Pendergast, Hutchinson.

Annual report of the executive board,
Wyman Elliot, Chairman, Minneapolis.

Annual report of secretary,
A. W. Latham, Minneapolis.

Annual report of treasurer, H. M. Lyman, Excelsior.

Report of legislative committee,
Wyman Elliot, Chairman.

Reports of Vice-Presidents,

F. W Kimball, First Congressional District, Austin.
S. D. Richardson, Second District, Winnebago City.
Mrs. A. A. Kennedy, Third District, Hutchinson
Vincent Bailey, Fourth District, St. Anthony Park.
Mrs. Jennie Stager, Sixth District, Sauk Rapids.
D. T. Wheaton, Seventh District, Morris.

Reports of Superintendents of Trial Stations,

Prof. S. B. Green, [Central Station.] St. Anthony Park.
E. H. S Dartt, Owatonna
Dewain Cook, Windom.
Chas. W. Sampson [grapes], Eureka.
O. M. Lord [plums and small fruits], Minnesota City.
H. M. Lyman [apples], Excelsior.
J. S. Harris, La Crescent.
L. R. Moyer, Montevideo.
Mrs. Jennie Stager, Sauk Rapids.
William Somerville, Viola
J. S. Parks, Pleasant Mounds.

Report of Committee on Fruit List,

Clarence Wedge, Albert Lea.
J. P. Andrews, Faribault.
Prof. S. B. Green, St. Anthony Park.

Report of Committee on Ornamental List,

F. H. Nutter, Minneapolis.
L. R. Moyer, Montevideo.
Fred. Nussbaumer, St. Paul.

Report of Committee on Seedling Fruits,
J. S. Harris, La Crescent.

Reports of Local Societies,

Southern Minnesota Hort. Society, Mrs Chas Brainerd, Sec'y, Albert Lea.
Meadow Vale Hort. Club, A. W. Keays, Secretary, Elk River.

Announce business session of the Minnesota State Forestry Association at 1:00 p. m.

THURSDAY AFTERNOON SESSION.

2 o'clock.

MEMORIAL HOUR.

Short addresses by a number of members and delegates.

Vocal Solo, by Robt. Davey, of the Dewey Theatre.

3 o'clock.

Annual Election of Officers.

Announce annual session of the Woman's Auxiliary Society in adjoining room.

Minnesota State Forestry Association, Joint Session.

(Under the auspices of the State Forestry Association.)

1. Forestry—As Applied to Minnesota Conditions,
Capt. J. N. Cross,
Pres. M. S. Forestry Assn.
2. A Lumberman's View of the Forestry Situation.
Col. W. P. Allen, St. Paul.
3. Forest Conditions in Germany,
Prof. S. B. Green, St. Anthony Park.
4. Our Paper and Pulp Industry,
H. B. Ayres, Carlton.
5. Wisdom of the National Park Movement,
Leo. M. Crafts, M. D., Minneapolis.

THURSDAY EVENING.

8 o'clock.

ANNUAL SOCIETY BANQUET.

At a place to be announced at the meeting.

FRIDAY MORNING SESSION.
9 o'clock.

Reports of committees on awards of premiums and president's address.

General Subject—Varieties of Fruit for Every One's Planting.

TEN TOPICS.

1. Varieties of Apples for Southern Minnesota,
   R. W. Chapman, Plainview.
   Wm. Somerville, Viola.
2. Varieties of Apples for Central Minnesota,
   D. F. Akin, Farmington.
3. Commercial Orchards for the Northwest,
   J. S. Trigg, Rockford, Iowa.
4. Varieties of Crabs for Minnesota Planting,
   Ditus Day, Farmington.
5. The Transcendent on Trial,
   J. T. Grimes, Minneapolis.

MUSIC—Black Pickaninny from Old Virginia,
Josephine Caroline Brayton.

6. Varieties of Plums for Minnesota,
   Wyman Elliot.
7. Varieties of Strawberries Suited for Minnesota,
   F. F. Farrar, White Bear.
8. Varieties of Grapes Best Adapted to Minnesota,
   Gust Johnson, Minneapolis.
9. What Blackberries, Currants and Gooseberries to Plant in Minnesota, A. W. Hawkins, Chowen.
10. Small Fruits in Northern Minnesota,
    C. H. Chapman, Grand Rapids.

Report of Committee on $1,000 Seedling Apple,
Prof. S. B. Green, St. Anthony Park.

Report of Committee on Gideon Seedlings,
Wyman Elliot.

FRIDAY AFTERNOON SESSION.
1:30 o'clock.

General Subject—Handling and Resetting of Plants.

TEN TOPICS.

1. Laying Out the Orchard and Setting the Trees,
   C. L. Blair, St. Charles.
2. Laying Out the Commercial Small-Fruit Farm—General Principles Involved,
   T. E. Cashman, Owatonna.
3. Laying Out the Vineyard and Putting in the Vines,
   A. D. Leach, Excelsior.
4. Laying Out the Plum Orchard and Handling the Trees in Planting. A. Wittmann,
   Merriam Park.

RECITATION—Miss Fuller, Pres. School of Oratory.

5. Laying Out and Planting the Strawberry Field.
   A. W. Keays, Elk River.
6. Laying Out and Setting the Raspberry and Blackberry Patch, Rolla Stubbs, Bederwood.
7. Laying Out and Planting the Currant and Gooseberry Plantation, C. E. Older, Luverne.
8. Handling and Care of Plants Received from the Nursery, Fall and Spring,
   W. S. Higbie, Washburn.
9. The Handling and Transplanting of Evergreens,
   Prof. C. B. Waldron, Fargo.
10. Locating and Planting the Windbreak,
    B. E. St. John, Fairmont,

Unfinished Business.

Report of Com. on Obituaries and Final Resolutions.

4:00 P. M.—Two Minute Speeches by the Members.

MUSIC.

4:30 P. M.—Closing Remarks by the President.

PROGRAM.
TWELFTH ANNUAL MEETING
MINNESOTA BEE-KEEPERS' ASSOCIATION,

To be held in Minneapolis, Minn. Wednesday, Thursday and Friday, Dec. 5, 6 and 7 1900. Sessions to be held in Plymouth Church, corner Eighth Street and Nicollet Avenue. Go in on Eighth street side.

OFFICERS.

President, J. P. West, Hastings, Minn.
First Vice-President, G. H. Pond, Bloomington, Minn.
Second Vice-President, W. H. Putnam, Hudson, Wis.
Third Vice-President, Frank Moeser, Minneapolis, Minn.
Secretary, Dr. L. D. Leonard, Minneapolis, Minn.
Treasurer, L. E. Day, Farmington, Minn.

EXECUTIVE COMMITTEE.

H. G. Acklin, St. Paul, Minn. Wm. Russell, Minnehaha Park, Minn.
H. B. VanVliet, Farmington, Minn.

WEDNESDAY MORNING SESSION.
9:30 o'clock.

Call to order.

Invocation, G. H. Pond, Bloomington, Minn.

SONG—Hum of the Bees in the Apple Tree Bloom,
Little Ethel Acklin, St. Paul, Minn.

Reading of the minutes.
Report of executive committee.
Reports of special committees.
Reports of officers.
Receiving communications and bills.

"Joining the National Bee-Keepers' Association in a Body," Dr. L. D. Leonard, Minneapolis, Minn.

Admission of new members and paying dues.

"Cooking with Honey."
Miss Moeser, Minneapolis, Minn.

Question Box, in charge of Mrs. H. G. Acklin, St. Paul.

Bee-Keepers' Program.

WEDNESDAY AFTERNOON SESSION.
1:30 o'clock.

Joint Session with the Horticulturists in their rooms.

SONG—Little Ethel Acklin, St. Paul, Minn.

"Bees and Horticulture—Their Relation Mutual," Dr. L. D. Leonard, Minneapolis, Minn.

"Something of Interest to Bee-Keepers and Horticulturists," J. P. West, Hastings, Minn.

THURSDAY MORNING SESSION.
9:30 o'clock.

SONG—Miss Clara Thompson, Minneapolis, Minn.

President's address, J. P. West, Hastings, Minn.

"Bee-Keeping near Duluth," Mary McCoy, M. D., Duluth, Minn.

"Talk by a Commission Man," L. W. Longfellow, Minneapolis, Minn.

Question Box.

THURSDAY AFTERNOON SESSION.

Meet with Horticultural Society till after election.

3:30 o'clock.

Adjourn to Bee-Keepers' room.

Piano Solo—Miss Katherine Barnes, Minneapolis, Minn.

"Disposing of Our Honey Crop to the Best Advantage," G. H. Pond, Bloomington, Minn.

"_____," C. Thielmann, Theilmanton, Minn.

Piano Duet—Leonard Boys, Minneapolis, Minn.

Question Box.

FRIDAY MORNING SESSION.
9:30 o'clock.

Song.

"Migratory Bee-Keeping," George A. Forgerson, Rosemount, Minn.

"Premiums at Our State Fair," Wm. Russell, Minnehaha Park, Minn.

"Wintering Bees Out-Doors," Charles Mondeng, Minneapolis, Minn.

Music.

"Bee-Keeping for Pleasure," Dr. E. K. Jaques, Crystal Lake, Minn.

Election of officers.

Question Box.

If desired, a short session can be held at 1:30 p. m.

Instrument furnished by Metropolitan Music Co. Minneapolis, Minn.

Please do not forget to buy your tickets for the Horticultural meeting and take certificates for them, to get the reduced railroad rate. See page 3 of this program for particulars.

PREMIUM LIST.

All exhibits must be entered with the secretary and in place the first day of the meeting to be entitled to compete for premiums.

Exhibitors competing must be members of this society and the growers or makers of the articles exhibited. The articles exhibited must have been grown in Minnesota or manufactured from Minnesota grown products.

Each exhibit of fruit must consist of four specimens except when otherwise noted.

No premiums will be awarded on unworthy exhibits.

	3d Prem.	1st Prem.	2d Prem.
APPLES.			
Collection, not to exceed 10 varieties	$2.00	$6.00	$4.00
Each variety of apples (or crabs) included in the 1900 fruit list of this society, or in the 1900 premium list of the Minnesota State Fair (kept in cold storage)		.50	.25
Each variety of apples (or crabs) included in the 1900 fruit list of this society, or in the 1900 premium list of the Minnesota State Fair (not kept in cold storage)		.75	.50
Seedling apple, never having received a premium from this society, not kept in cold storage		3.00	2.00
Peck of Wealthy apples, the fruit exhibited to be at the disposal of the meeting, $1.00		3.00	2.00
GRAPES.			
Collection		3.00	2.00
Each variety exhibited included in the fruit list of this society for 1900, or in the 1900 Minnesota State Fair premium list		.75	.50
FLOWERS.			
Collection of ornamental and flowering plants		5.00	3.00
Collection of cut roses		2.00	1.00
Collection of cut carnations		2.00	1.00
Table bouquet		2.00	1.00
Basket of flowers		2.00	1.00
HONEY.			
Collection of comb honey *ad libitum*		5.00	3.00
Collection of extracted honey "		3.00	2.00

Secretary's Corner.

A Special Forestry Bulletin—The article in this number of "The Expense of the Proposed National Park," by Prof. S. B. Green, is about to be issued by the University of Minnesota in substance as here printed as a special bulletin. It is commended to your careful perusal.

Can You Afford to Miss Our Annual Meeting?—Study the program, now in your hands, and see if you can afford to miss such a meeting as this promises to be, even if you have already attended one horticultural meeting this season. That will only whit your appetite for this.

Gone to California.—Early in November Mr. J. M. Underwood and wife went to Southern California, where they will spend the winter with a brother of his at Los Angeles. We shall miss them much at our coming annual meeting, from one of which they have not been absent in many years.

A Quartette of Professors of Horticulture.—At our coming annual meeting will be present the professors of horticulture connected with the State Agricultural Experiment Stations of North Dakota, South Dakota, Wisconsin and Minnesota and perhaps others. They would make a convention alone.

The Northwestern Iowa Hort. Society.—Meets in annual session this year at Emmetsburg, on Dec. 4, 5, 6. Unfortunately this date clashes with that of the meeting of our own society, and we are unable to exchange delegates without depriving some one of the privilege of attending his own meeting.

The Delegate from Iowa.—Hon. C. L. Watrous, president of the American Pomological Society, who represents the Iowa State Society at our meeting, is to talk on the subject of "Origination of New Fruits" immediately after the reading of a paper on that subject by Chas. G. Patten, of Charles City, Iowa, on Wednesday forenoon.

The Proposed Badge Book.—Have you notified the secretary of your proposed attendance at the coming annual meeting so that your name may go into the badge book? If not, there may yet be time, if you write *immediately*. They must be ready for use December 4th, and it will take three days to get them out. Your name should appear there.

A Full Program.—The coming meeting is to be a busy one for a large portion of those in attendance. Over eighty persons have accepted assignments on the program, and in many cases they are called on for more than one service, to which all are cheerfully responding. It is this hearty willingness to serve which is making this society such a power for usefulness.

AN ECONOMICAL MANAGEMENT.—Mr. Rolla Stubbs, of Bederwood, Secretary of the Lake Minnetonka Fruit Growers' Association, writes that the association handled this season $13,000 worth of fruits at an expense of 2 2-5 per cent for handling and every dollar collected in. This is a remarkable record and reflects great credit on the management. What similar association has done better?

THE NEW HORTICULTURAL AND AGRICULTURAL BUILDING FOR THE STATE FAIR.—What will you do to help along the project to construct a building on the fair grounds for the joint use of these two interests? It is badly needed and would illustrate grandly the work of these two important departments of rural life. Say a few quiet words to your representative in the legislature for the appropriation that must be made for its erection.

THE WISCONSIN STATE HORTICULTURAL SOCIETY.—This association announces its annual meeting at Oshkosh on Jan. 14-17, 1901. Prof. E. S. Goff, Horticulturist at the Wis. Agri. Exp. Station will represent that society at our annual meeting. Note his talk on "The Flower Buds of Our Fruit Trees" preliminary to Prof. Green's address, on Wednesday evening. He has been making special investigations on this subject, and his conclusions should be both interesting and instructive.

A FIFTY YEARS' ABSENCE.—Our Mr. J. S. Harris, accompained by his wife, lately returned from a visit to the home of his boyhood at Seville, O., from which he has been absence fifty-one years. Aboriginal forests have disappeared and the orchards supplanting them grown gray and decrepit with old age in this long half century, till old land marks have practically disappeared. Notwithstanding the great improvements there, he says "But after all it is in many things very far behind our Minnesota, and I will be glad when I get home again," which statement we are pleased to quote.

HOW TO PRODUCE THE $1,000 SEEDLING APPLE.—Your special attention is called to a carefully written article under the above title, published in this number, by Prof. N. E. Hansen, the well known horticulturist, now connected with the Agricultural Experiment Station at Brookings, S. D. Its general reading should give a stimulus to the fascinating work of growing apple seedlings, which will be found most interesting even though the premium offered may in the end not be attained. There is reasonable ground for hope however, that intelligent efforts made along the various practical lines suggested will bring out results of value to every experimenter. Which of these lines will you follow?

GREEN'S "VEGETABLE GARDENING" IN DEMAND AS A TEXT BOOK.—Prof. S. B. Green has much reason to be satisfied with the reception the class book he prepared for use in our agricultural college has received from similar schools in this country. The latest institution of this character to introduce it is the Baron de Hirsch Industrial School, in New Jersey. The growing use of this excellent work has heretofore been spoken of in these columns. Some schools are using two of Prof. Green's works, and at least one, the Agricultural College at Ames, Ia., is using all three, those on Vegetable Growing, Fruit Growing and Forestry. A new edition of "Amateur Fruit Growing" has lately been put out with some newer matter in the form of an appendix.

Annual Meeting,

Dec. 5-8, 1899.

JOURNAL OF THE THIRTY-THIRD ANNUAL MEETING OF THE MINNESOTA STATE HORTICULTURAL SOCIETY.

[For program of this meeting see page 473, Report of 1898.]

The meeting was called to order by the president, W. W. Pendergast, at 10 o'clock, in the rooms of the county commissioners of Hennepin county, and an invocation was offered by Rev. T. A. Turner, late chaplain of the 15th Minn. Vol. Inf.

GREETING BY THE PRESIDENT.

W. W. PENDERGAST, HUTCHINSON.

I see the first thing on the program is a greeting by the president. Our program is so crowded, we have got so much to do, that I do not think it best to take up your time in talking of those things which will not add to the usefulness of the society.

We all feel that it is a good thing for us to get together once or twice a year and compare notes and see what each one has learned and all the new things that he has discovered in his work. It is not only a great pleasure, but it is of the greatest benefit and profit to us. One of the members this morning was telling me how a neighbor of his, a bright, sensible man, said to him what a fool he should have been if he could not have gone to somebody that knew more than he did with his tough and knotty questions. He might wait a whole lifetime to get one question answered, the same as I felt at one time with reference to a question in geography. For years I was at a loss to know why that little point projects out from the state in the northern part of Minnesota in the Lake of the Woods region. I went to everybody whom I thought would know, but nobody could answer that question. If I could have found somebody that knew he could have answered that question in a minute, and all would have been satisfactory, for I would have thought it over and fixed it in my mind. That brings us to an important thing. We can learn a great many things if we do not let them go in at one ear and out at the other. Our mothers had no trouble in coloring

their cloth, but they had trouble to set the color. They must have something to beat the color in. So if we get any information we must have something to establish it, something in our experience and in our thoughts that will last as long as we are interested in the work we are doing. I do not hear that any of our number are becoming Astors, Goulds or Vanderbilts, but I tell you we are enjoying life and getting more out of it than any Astor, Gould or Vanderbilt. We can now see what we have worked so faithfully for during all these years, because our efforts are blossoming out and failure is no longer possible; success is in sight. That is a great thing. I have said a great many times, the question is not how much salary we get, but the question is what are we succeeding in doing? The men I see before me that are growing old in the service have persevered until they see success and are happy over the prospect of full success. Some men think their success is coming a little late in life and wish they were forty years younger when it heaves in sight, but there are a great many happy years before even these oldest ones yet.

Every meeting of ours is a more pleasant and a more enjoyable one than that preceding. I will say in closing that we are all happy to be here today. We are all glad to come to these gatherings, and I voice the sentiments of those that are not here when I congratulate those that were able to come, and I am certain we shall all go away feeling as though something had been gained by our meeting here these three or four days.

Now we have a great deal to do at this meeting. There are seven papers that will occupy five minutes each, and if we are prompt we can discuss these papers and derive a great deal of good from both the papers and the discussion.

"Valuable Varieties of Native Plums." Martin Penning, Sleepy Eye. (See index.)

Discussion.

"Locating, Laying out and Planting the Plum Orchard." Dewain Cook, Windom. (See index.)

Discussion.

"The Problem of Improving the Native Plum." O. M. Lord, Minnesota City. (See index.)

Discussion.

"Insects and Diseases Injurious to the Plum." Prof. Otto Lugger, St. Anthony Park. (See index.)

Discussion.

"Treatment of the Plum Orchard." O. W. Moore, Spring Valley. (See index.)

"Harvesting and Marketing the Plum Crop." Henry Dunsmoor, Olivia. (See index.)

Discussion.

The president appointed the following gentlemen as members of the committee on credentials: R. H. L. Jewett, W. L. Taylor and P. M. Endsley.

"Exihibiting Fruit at the State Fair from the Judge's Standpoint." Prof. S. B. Green, St. Anthony Park. (See index.)

Discussion.

On motion of Mr. Wedge the session adjourned to 2 p. m.

TUESDAY AFTERNOON SESSION.

The meeting was called to order at 2 o'clock by the president.

"Exhibiting Fruit at the State Fair—from the Exhibitor's Standpoint." Clarence Wedge, Albert Lea. (See index.)

Discussion.

Mr. Jewett, in behalf of the committee on credentials, presented the names of Mr. Eugene Secor, from the Iowa State Horticultural Society, and Mr. I. M. Smith, from the Wisconsin State Horticultural Society, as delegates.

The President: We all know more or less about these two gentlemen, but perhaps most of us have never made their personal acquaintance, and I would like to introduce them to the audience. I will first introduce Mr. Secor, of the Iowa society, and ask him to make a few remarks.

Mr. Eugene Secor (Iowa): It certainly gives me great pleasure to meet you here on this occasion, and to meet so many whose names have become household words to me, and it also gives me great pleasure in looking over your exhibits to appreciate the fact that Minnesota can raise some fruit and does raise some fruit, and so long as Minnesota can produce such apples as the Wealthy and such plums as the Surprise it certainly will be an object to us Iowa people to come up here and interview your exhibits and to get acquainted with the people that produce those things.

I am very glad to meet with you and to convey to you the greetings of our state society. (Applause.)

The President: I will say that the pleasure is mutual. I now take pleasure in introducing to you Mr. Smith, representing the Wisconsin society. We have nearly all heard of him and of his father before him; in fact, the names have been household words in Wisconsin, and most of us have heard the same here. We would like to have Mr. Smith say a few words.

Mr. I. M. Smith (Wis.): I must confess I was considerably surprised to receive an appointment from our president, Mr. Johnson, to come here as a delegate from the state society, and I feel it an honor not to be despised. In reference to the work we have to do, I feel as though I were not exactly at home in discussing apples

and plums, but perhaps when we get to the latter part of our program we will get into something in which our line of life work has so far run. I hope I may not be a disgrace to my father, who was so well known among you and in the great state of Wisconsin. It is with great pleasure I bring to you the greetings of our Wisconsin society. (Applause.)

The President: We thank Mr. Smith for his kind remarks.

"Best Varieties of Trees for Street Planting." Wyman Elliot, Minneapolis. (See index.)

Discussion.

"Report of Committee on Ornamental List." F. H. Nutter, Minneapolis; L. R. Moyer, Montevideo. (See index.)

"The Catalpa for Minnesota." J. T. Grimes, Minneapolis. (See index.)

"Locating Shrubs on the Grounds for Effect." F. H. Nutter, Minneapolis. (See index.)

"The Practical Value of Tree and Shrub Ornamentation about the Home." W. W. Pendergast, Hutchinson. (See index.)

Discussion.

"Some Desirable Things for Prairie Planting." L. R. Moyer, Montevideo. (See index.)

Discussion.

"Facts About the Weather of 1899 in Minnesota of Interest to the Horticulturist." T. S. Outram, Weather Observer, Minneapolis. (See index.)

Discussion.

The president appointed committees on awards as follows:

Apples: J. P. Andrews.

Grapes: J. S. Harris.

Flowers: Mrs. D. W. Sprague.

Honey: Eugene Secor.

Committee on obituaries: J. S. Harris, J. T. Grimes and E. R. Pond.

Committee on final resolutions : C. E. Older, R. A. Wright and S. D. Richardson.

WEDNESDAY MORNING SESSION.

The meeting was called to order by the president at 9:30 o'clock.

The audience was entertained with a vocal selection by Mrs. D. L. Miner and Mrs. Hugh McLeod.

Mr. W. L. Taylor, in behalf of the committee on credentials reported favorably upon the names of Mr. W. A. Burnap, represent-

ing the Northeastern Iowa Horticultural Society, and Mr. W. J. Reeves, representing the Northwestern Iowa Horticultural Society.

The President: I have the pleasure of introducing our visitors from Iowa, and I will first introduce Mr. Burnap.

Mr. W. A. Burnap (Iowa): I am glad to be with you again. You have a very interesting program, and I hope to participate with you in discussing it. As I know your work will be crowded I realize that silence is golden at this time on my part. I expect to enjoy the meeting and know I will be well treated from the experience I had two years ago.

The President: Thank you, Mr. Burnap. We will now ask Mr. Reeves to say a few words to us.

Mr. W. J. Reeves (Iowa): This is my first visit with you, and I come as a learner and not as a talker. I was promised I would not be called upon, but the first thing I know I am asked to say something. This is my first visit to your city and almost to your state, and I am pleased to be with you. I did not expect to come until yesterday at 12 o'clock. If I can add anything of interest as we pass along I shall be glad to do so. I was looking for orchards from the train on the way up here yesterday, and I did not see anything but hay stacks, but this morning I noticed quite a display of fruit on the tables in the other room, and I shall be glad to hear how you raise it and all about it.

The President: We are glad to have all of these delegates with us, and we hope to get something from you men from an older state that will be of help to us, and perhaps you might learn something from us, how we manage to raise a few apples in the frozen north.

Mr. Harris: I notice Prof. Waldron, of North Dakota, is with us, and perhaps he can tell us how they raise apples in the banana belt.

The President: We will give him, as we do the other visitors from abroad, a most cordial welcome, and we will call on Prof. Waldron to say a few words from North Dakota.

Prof. C. B. Waldron (North Dakota): I thank you for the welcome extended, but I am simply here for the purpose of gathering information for the bulletin which is due this month. The state I represent has been doing a great deal of work in the line of tree planting and ornamental work, and I am particularly interested in that line of work. I have had the pleasure of attending these meetings from time to time the past few years and consider it a great pleasure. We tried in a small way to organize a horticultural society in North Dakota, but the state is large, and it costs four cents a mile to travel, and it is hard to get people together, and whatever

information we workers want must come from nearby societies like this one. However, we are making progress, and this year we ripened Moore's Early grapes at Fargo and brought Concords nearly to the ripening stage.

The regular program was then proceeded with:

"The Pollination of Flowers." Prof. Conway MacMillan, Minnesota State University.

Discussion.

"Report of Central Station." Prof. S. B. Green, St. Anthony Park. (See index.)

"Report of Owatonna Trial Station." E. H. S. Dartt, Owatonna. (See index.)

On motion of Mr. Taylor the meeting adjourned until 2 o'clock.

WEDNESDAY AFTERNOON SESSION.

The afternoon session was convened in Pendergast Hall, at the State Agricultural College, and was called to order at 3 o'clock by the president.

The deferred numbers of the morning's program were first considered.

"Profits of Blackberry Culture." W. S. Widmoyer, Dresbach. (See index.)

"Planting and Care of the Blackberry Plantation the First Twelve Months." W. P. Rogers, Excelsior. (See index.)

Discussion.

"Care of the Blackberry Plantation the Second Year till after Harvest." W. H. Eddy, Howard Lake. (See index.)

Discussion.

"Pruning, Fall Cultivation and Winter Protection of the Blackberry." R. A. Wright, Eureka. (See index.)

Discussion.

"Harvesting the Blackberry Crop." G. E. Widger, Chatfield. (See index.)

"Drawbacks to Success in Blackberry Culture in Minnesota." Thomas Redpath, Long Lake. (See index.)

Discussion.

"Conditions Necessary to the Successful Wintering of a Minnesota Orchard." E. H. S. Dartt, Owatonna. (See index.)

"Varieties of Apples Best Adapted to Southwestern Minnesota." C. E. Older, Luverne. (See index.)

The President: I will call on Prof. Hansen to give the result of his observations on root-killing. (See index.)

"Prospects of Apple Growing in the Red River Valley." Rev. O. A. Th. Solem, Halstad. (See index.)

Discussion.

"Apple Culture in the Lake Superior Region of Minnesota." R. L. Pendergast, Duluth. (See index.)

"The Wealthy Apple." A. W. Latham, Secretary. (See index.)

Discussion.

Secretary Latham gave notice of a motion to change the constitution at the Friday afternoon session.

Amend Article III of the constitution by adding after the word "vote" in the twentieth line, as published in the report of this society for the year 1899, the words " on any proposed amendment to the constitution or by-laws or"; and Article XIII by inserting after the word "members" in the second line the words "who are entitled to vote thereon."

"What Can Be Grown Profitably in the Orchard." S. D. Richardson, Winnebago City. (See index.)

Discussion.

WEDNESDAY EVENING.

The following program was given by the students of the Farm School and others in Pendergast Hall, Minn. School of Agriculture, under the management of Prof. S. B. Green:

PROGRAM.

Selection.....School Band
Selection.....School Orchestra
Prairie Windbreaks.....C. Olstad, School of Agriculture
Managing a Fruit Farm.....A. D. Grant, School of Agriculture
Selection.....School Chorus
Selection (Vocal).....J. M. Underwood and Son
Selection ..... School Orchestra.
Crossing Wheat.....E. D. Parker, School of Agriculture
A Talk on Travels in Russia and Siberia, Illustrated by Stereopticon
.....Prof. N. E. Hansen, Brookings, S. D.
Selection.....Quartette
Agriculture in Europe.....Prof. W. M. Hays
Selection.....School Band

On motion of Mr. Harris the meeting adjourned until 9 o'clock Thursday morning.

THURSDAY MORNING SESSION.

The meeting was called to order at 9 o'clock by the president.

The President: There is an old friend of mine here whom I met years ago in Massachusetts, and he is always at work doing some good and trying to make the world a little better, and I told him I would try to give him a chance to speak a little while here. I have the pleasure of introducing to you my old friend Col. Daniels. (See index.)

"President's Annual Address." W. W. Pendergast, Hutchinson. (See index.)

The president then read telegrams of greeting from the Missouri and the Northwestern Iowa Horticultural Societies, to which the secretary was instructed to make a suitable response.

"Annual Report of Secretary." A. W. Latham, Minneapolis. (See index.)

On motion of Mr. Harris the report of the secretary was adopted.

"Annual Report of Treasurer." C. W. Sampson, Eureka. (See index.)

On motion of Mr. Wedge the report of the treasurer was adopted.

"Annual Report of the Executive Board." Wyman Elliot, Chairman, Minneapolis. (See index.)

On motion of Mr. Wheaton the report was adopted.

"Report of Legislative Committee." Wyman Elliot, Chairman, Minneapolis. (See index.)

Mr. Elliot: This matter of regulation of nursery stock is of great importance. One nurseryman said to me the other day, "I can sell nothing outside of the state. The moment I attempt to deliver anything outside of the state I am stopped." We have no law regulating the matter in our state, and some of our members were so much opposed to it that they prevented the passage of the law. Not only our own members, but some of the nurserymen outside the state took particular pains to circulate papers and do everything possible to prevent the passage of such a law, but I hope during the session of the next legislature we may see our way clear to inaugurate some protection of this nature.

On motion of Mr. Grimes the report was adopted and ordered placed on file for publication.

"The Story of a Minnesota Garden." Prof. Thomas Shaw, St. Anthony Park. (See index.)

"Report of Vice-President Third District." Mrs. A. A. Kennedy, Hutchinson. (See index.)

"Top-Working a Factor in Increasing the Hardiness of Fruit Trees." Charles G. Patten, Charles City, Iowa. (See index.)

Discussion.

The following members were appointed a committee on president's address: A. G. Wilcox, W. H. Eddy and O. M. Lord.

"Preparation of the Soil." I. M. Smith, Green Bay, Wis. (See index.)

"Best Varieties of Turnips and How to Grow Them." (Vincent Reeves, Champlin. (See index.)

Discussion.

"An Asparagus Bed for Every Home Lot." W. G. Beardsley, Minneapolis. (See index.)

Discussion.

"Best Two Kinds of Onions and How to Grow Them." John Zeller, New Ulm. (See index.)

Discussion.

"My Family Garden." D. E. Goodman, Faribault. (See index.)

On motion of Mr. Wedge the society adjourned until 2 p. m.

THURSDAY AFTERNOON SESSION.

The meeting was called to order at 2 o'clock by the president.

The President: It has been decided that we devote an hour or more this afternoon to the memory of our late lamented friend and fellow worker in this cause which we all have so near at heart, and who has within a few weeks passed on to the great beyond, Mr. Peter M. Gideon. We all feel as though this was an extraordinary occasion. Mr. Gideon was no ordinary man. The work that he did for the state was no ordinary work. It is exceedingly meet and fitting that we should take up a part of our time, valuable as it is, in saying something to impress upon not only the members of the society, but upon all to whom the reports of this meeting shall go, to all those who have an opportunity to read the proceedings of this society in the annual reports of the year, it is fitting, I say, that this time should be devoted to this purpose this afternoon, and several of our members have been spoken to and asked to be present to take part in these memorial services.

A vocal duet suitable to the occasion was then beautifully rendered by Mrs. D. L. Miner and Mrs. R. A. Latham.

Memorial addresses were then delivered by Prof. S. B. Green, J. M. Underwood, Col. John H. Stevens, J. S. Harris, Wyman Elliot, A. J. Philips, of Wisconsin, J. T. Grimes, Hon. S. M. Owen Pres. W. W. Pendergast and O. F. Brand. (See index.)

After the conclusion of the addresses Prof. Singer, of Minneapolis, sang a beautiful baritone solo, "My Ain Countrie."

The election of officers being the next business on the program the following were elected to serve during 1900: (See index.)

FORESTRY.

Capt. J. N. Cross, president of the Minnesota State Forestry Association, here assumed the chair.

"What I Saw of Forestry in Europe." Hon. S. M. Owen, Minneapolis. (See index.)

Mr. Latham then introduced a resolution asking the superintendent of the Farmers' Institute to arrange for one address at each institute on the subject of practical forestry.

On motion of Mr. Harris the resolution was adopted unanimously.

"Forestry Experiments Which Should Be Undertaken in Minnesota." Prof. S. B. Green, St. Anthony Park. (See index.)

FRIDAY MORNING SESSION.

The meeting was called to order at 9:30 by the president.

"Report of Committee on Nomenclature." J. S. Harris, La Crescent. (See index.)

On motion of Mr. Latham, the report of the committee was adopted.

Mr. Harris moved that the secretary be instructed to furnish the committee on nomenclature with a card to designate the different varieties of fruit.

On motion of Prof. Green the matter was ordered referred to the executive board.

"Report of Committee on President's Address." (See index.)

On motion of Mr. Harris the report of the committee was adopted.

"Report of Committee on Fruit List." (See index.)

On motion of Prof. Green the report of the committee was adopted.

"Report of the Woman's Auxiliary Society." Mrs. Anna B. Underwood, Secretary, Lake City. (See index.)

The President: We have heard the practical side and now we will look for a moment on the poetical side, and I do not know who is better able to present it than my old friend, S. M. Owen.

"Our Poet Friends." Hon. S. M. Owen, Minneapolis. (See index.)

Discussion.

Mr. Philips (Wis.): I wish to commend my friend Owen's paper and speak a few words for myself. There is hardly a chance to say anything after he gets through, because he usually says all there is to be said. However, in his beautiful tribute to our great poets he has omitted some poets in our own societies, and I wish to read a few poems that their authors may receive due recognition.

Mr. Philips then read poems written by Mr. Dartt, Dr. Loope of Eureka, Wis., and by himself.

"Sweet Pea Culture from a Commercial Standpoint." Mrs. H. K. Eves, Minneapolis. (See index.)

Discussion.

"The Flower Garden an Index of Character." Mrs. Frances Town, Hewitt. (See index.)

"Nature Study—What Is It?" Mrs. Anna B. Underwood, Lake City. (See index.)

Discussion.

Mr. Philips (Wis.): I think we should teach our children more the love of nature. I have read during the past year with great interest the writings of that gentleman whose poem Mr. Owen read here today, and I move that we extend to Mr. Goff a rising vote of thanks.

Mr. Wedge: I am glad to second that motion, especially as Mr. Goff is present with us, and we have an opportunity to express our appreciation in his presence.

Mr. Goff: In the course of men's lives we do repeatedly wish that we were gifted with the power of eloquence, the power of speech. I did not expect this compliment; it almost overcomes me. What I said came from the heart. I was here in the early times when the country was really as I described it, "as sweet as chimes of the evening." Ladies and gentlemen, I sincerely thank you for this great compliment you have paid me.

Mr. Elliot submitted the following list of names of old workers in the horticultural society to become life members, and moved that they be made honorary life members: J. G. Bass, Hamline; S. H. Kenney, Morristown; R. Knapheide, St. Paul; O. M. Lord, Minnesota City; Wm. Mackintosh, Langdon; Wm. Oxford, Free-

burg; S. D. Richardson, Winnebago City; Charles G. Patten, Charles City, Ia.; Prof. N. E. Hansen, Brookings, S. D.

Mr. Harris: I rise to second the motion; I think we ought to make these men life members. I am acquainted with them all. The two members outside of the state are famous workers and have a world reputation which entitles them to recognition. A few of those whom we propose to make life members are very modest, and we have not heard much from them. They are putting in their time doing faithful work. They are now well along in years and a great many of them getting into their second childhood like myself, and it will please them to be made life members.

The motion being put to a vote unanimously prevailed by a rising vote.

Mr. Underwood: I move, Mr. President, that a committee be appointed to decide upon the most expedient way of raising a fund which shall be given to the regents of the state university for the purpose of putting it out at interest, that interest to be applied in some way to be decided upon by this committee after conferring with the dean of the agricultural school, either as a prize or to defray the expenses of students at the agricultural school or the school of horticulture. I have conferred with Col. Liggett and Prof. Green, and they have intimated to me that that was something that could be done and in their estimation it would be a very good way, a practical way, to perpetuate the regard in which we hold the memory of Peter M. Gideon. We could erect a statue in some public place and put a Wealthy apple on it, but it would cost us more money, and I doubt if it would have the lasting influence that something of the kind I suggested would have. I think it would be advisable in order to leave it in such shape as to be sure that something will be done that a committee be appointed or that it be referred to the executive board. I am not particular in what way it is left, so it is taken care of. Therefore, I make a motion that a committee of three be appointed to devise some proper means to be submitted to the executive board for their approval.

The motion was duly seconded and, being put to a vote, unanimously prevailed.

Mr. Sherman (Iowa): I stand here today in some sense, perhaps, representing Mr. Patten, and I wish to thank the society most heartily for the honor of making him a life member of the society. Mr. Patten has labored unceasingly for years in the interest of horticulture in the northwest. He has not done the work for revenue but for the good of the people. From a great deal of this

work it is impossible for him to derive any revenue. He has planted thousands of trees, and has tried those trees and selected from them those that he thought would be valuable. He has intimated to me sometimes that this work is not appreciated by the people of the northwest, and in behalf of Mr. Patten I wish to thank you for this honor, because you knew what has been done by him.

Mrs. Kennedy: Mrs. Bonniwell asked me in her dying moments to be remembered to the society, and in her last moments with tears in her eyes she said she wished she could be with you once more.

Mr. Harris: To those who did not know Mrs. Bonniwell I wish to say that she was a very earnest friend of the Minnesota State Horticultural Society. She attended regularly for a number of years until her health failed, and she was no longer able to come.

Mr. Brand: I always thought Mrs. Bonniwell was one of the noblest works of God, and I would make a motion that the president of this society be instructed to obtain the necessary facts about her to be published in our proceedings and that a photograph be inserted with the sketch of her life.

The motion being put to a vote unanimously prevailed.

On motion of Mr. Wedge delegates from abroad were made honorary members of the society for the year 1900.

Articles III and XIII as proposed to be amended at the previous day's session were then brought up for consideration, and on motion of Mr. Wyman Elliot the amendments were unanimously adopted.

Mr. Smith (Wis.): As one of the visiting delegates to your society I wish to express my hearty appreciation of the honor conferred upon me in electing me an annual member of the society for the ensuing year.

Prof. Hansen (S. D.): I wish to thank the society for the honor conferred upon me in making me a life member, and I hope you will send to South Dakota a delegate to our annual meeting to be held at Parker, S. D., on the 16-18 of January. It is not a society as large as that of Minnesota; we are just beginning, as we have no funds, but we at least have a determination to succeed in our work.

The Secretary: Mr. C. E. Older, of Luverne, has been selected as a delegate to South Dakota, Mr. Frank Yahnke, of Winona, for Wisconsin and Mr. O. M. Lord, of Minnesota City, will represent our society at the Iowa state meeting.

On motion of Mr. Taylor, the society adjourned to 2 o'clock p. m.

FRIDAY AFTERNOON SESSION.

The meeting was called to order at 2 o'clock by the president.

"Report of Committee on Seedling Fruits." J. S. Harris, La Crescent. (See index.)

The President: While we are on this topic, and as it seems to call forth no discussion, we might employ a few minutes profitably by having Mr. J. L. Parks tell us something about his seedling orchard.

"My Seedling Orchard." J. S. Parks, Pleasant Mounds. (See index.)

"A Thousand Words on a Thousand Dollar Apple Seedling Premium." J. M. Underwood, Lake City. (See index.)

"How Minnesota Seedlings Have Come Through the Past Winter." J. S. Harris, La Crescent. (See index.)

"Suggestions to Competitors for the One Thousand Dollar Seedling Prize and Report of the Committee of Award." Prof. S. B. Green, Chairman, St. Anthony Park. (See index.)

Discussion.

"The Art of Growing Apple Seedlings." Frank Yahnke, Winona. (See index.)

Discussion.

"Seedlings at Wisconsin Trial Station." A. J. Philips, Secretary, West Salem.

The President: During these four days I have had a remarkably pleasant time, and I have learned a great deal, and, what is better still, I have got a great many seeds of thought planted in my brain that I hope will sprout and bear fruit by and by. I am young yet, and there is a chance for quite a growth of those seeds before I conclude to shuffle off this mortal coil, and one year from today I hope I shall be able to meet with you again; and also at the summer meeting at the experiment station, if we conclude to go there, I expect to be there and hope it will be another delightful occasion. And now I shall have to leave you to the tender mercies of Mr. Underwood, whom you know very well, having gotten along under his administration for several years much better than you will be likely to get along under mine. I know that the few remaining minutes of this session will be well spent. (Applause.)

Mr. Underwood then assumed the chair for the remainder of the session.

The Chairman: I did not expect to be asked to preside at this time, and it is almost embarrassing after such a splendid presiding officer has just left the chair to be expected to fill his place, but as it is to be only for a short time I hope you will survive it.

"Report of Committee on Final Resolutions." C. E. Older, Chairman, Luverne.

Final Resolutions.—Whereas, we, the rank and file of the Minnesota State Horticultural Society, have greatly enjoyed and profited by the past meeting, and realizing that many circumstances have contributed to this end, we desire to express our appreciation and thanks by the following resolutions:

Resolved, That we are under obligations to the officers of Hennepin county for the use of rooms most admirably adapted to our purposes, situated in a building of such beauty and magnificence.

Resolved, That thanks are due to the citizens of Minneapolis and vicinity for their interest in our meeting, as shown by the attendance and assistance, and to the press for their full and accurate reports.

Resolved, That we highly appreciate the entertainment provided for the society at the State Farm School and thank the officers and students connected therewith.

Resolved, That we thank Prof. N. E. Hansen for the very interesting stereopticon lecture in connection with the above entertainment.

Resolved, That thanks are due to our visiting brethren from Wisconsin, Iowa and the two Dakotas for their attendance and assistance.

Resolved, That we regard this meeting as being one of the best of our society, and our especial thanks are due to its officers, who have contributed so much time and labor to make it a success.

Resolved, That we return thanks to the ladies and gentlemen who have so kindly entertained us with music and singing at our sessions and to the Metropolitan Music Company for the use of their fine piano.

Resolved, That we heartily thank the superintendent and his assistant at the court-house for their kindly efforts in our behalf.

Resolved, That we recognize in the officers and professors of the School of Agriculture special and rare abilities for the work they are engaged in, and hope the young people of our state will take advantage of this opportunity for their advancement.

Respectfully submitted,
C. E. OLDER,
S. D. RICHARDSON,
R. A. WRIGHT.

On motion of Mr. Wedge, the report was accepted.

The Chairman: The last item on our program now is two minute speeches by the members. This is to give you an opportunity to put in two minutes apiece, and I hope you will all jump to your feet at once; let us see who will be the first to be recognized.

Mr. Secor (Iowa): Mr. Chairman, I should feel guilty if I returned home without expressing to you the pleasure I have received in attending your meetings this week. This is the first opportunity I have had of meeting with your state society. You have here such enthusiasm in all your proceedings that I do not believe it will be the last time I shall be here. We feel that your work is

so nearly in the same field with the work that we are trying to do in the northern part of the state, that we are especially interested in the problem you are trying to solve to raise some hardy varieties. That is the problem which northern Iowa is trying to solve, and we are trying to work it out along the same lines in which you are engaged.

As a representative of the state society I wish to thank you for the very hearty welcome you have given me and the entertainment and pleasure your meeting has afforded me, and I wish to invite you to our state meeting, to begin next Tuesday morning at Des Moines, and while it possibly may not rival yours in enthusiasm I believe you will find a good lot of people down in Iowa. I hope you will come and see us.

The Chairman: Thank you, Mr. Secor. We are pleased to have you with us and hope you will often visit Minnesota and feel perfectly at home among us.

Mr. Jerabek: While I was looking around my place I found in an old orchard site four Siberian crab trees. Why are they not recommended for planting by the society?

The Chairman: The Siberian crab has its value as a hardy stock, but it is not of sufficient value to be sought after. There is probably nothing that is hardier, and Prof. Hansen is recommending that we use the Siberian crab to get better apples.

On motion of Mr. C. E. Older, the society adjourned sine die.

Executive Board, 1900.

RECORDS OF THE EXECUTIVE BOARD FOR THE YEAR ENDING DEC. 1, 1900.

Record of meeting held at the secretary's office, Minneapolis, 7:30 p. m., Dec. 4, 1899.

Present, Messrs. Elliot, Harris, Moyer, Pendergast and Latham. The following bill for premiums paid at summer meeting, 1899, was ordered paid.

C. W. Sampson.. .....$99.25.

The accounts of the treasurer for 1899, C. W. Sampson, were examined and found correct.

The secretary's account of receipts and disbursements in connection with his office, from June 24, 1899, to Dec. 4, 1899, was examined and approved, and his bill for such expenses was ordered paid:

A. W. Latham $336.66

The following bills were audited and allowed:

L. R. Moyer, expenses Executive Board.....	$13.37
J. S. Harris, expenses Executive Board.....	20.00
J. S. Harris, expense Seedling Committee.....	15.04

Adjourned sine die.

WYMAN ELLIOT,
Chairman Executive Board.

A. W. Latham, Sec.

Record of meeting held at secretary's office, Minneapolis, 7:30 p. m., Dec. 5, 1899.

All present except S. B. Green.

The following list of members it was decided to recommend to the society for honorary life membership: J. G. Bass, S. H. Kenney, R. Knapheide, O. M. Lord, Wm. Mackintosh, Wm. Oxford, S. D. Richardson, N. E. Hansén and C. G. Patten.

The secretary was instructed to draft and submit to the society for action an amendment to the constitution which should restrict

voters on any amendment to the constitution or by-laws in the same way they are now restricted as to election of officers.

Adjourned sine die.

WYMAN ELLIOT,
Chairman Executive Board.

A. W. Latham, Sec.

Record of meeting held in the secretary's office, Minneapolis, 7:30 p. m., Dec. 7, 1899.

All present except L. R. Moyer.

The following delegates were chosen to represent this society at various horticultural meetings:

C. E. Older, to South Dakota State Horticultural Society.

O. M. Lord, to Iowa State Horticultural Society.

Frank Yahnke, to Wisconsin State Horticultural Society.

Wyman Elliot was elected chairman of the board for the ensuing year.

A. W. Latham was elected secretary for the ensuing year, at a salary of $75 per month.

The salaries of the president and treasurer were fixed at $25 each for the year 1900.

J. S. Parks, of Pleasant Mounds, was appointed superintendent of a trial station, to be located at his place.

Upon the request of Clarence Wedge, the trial station on his grounds was discontinued.

A committee consisting of Messrs. Elliot, Green and Harris was appointed to look after the apple seedlings growing on the Gideon place.

It was decided to refer the question of giving plant premiums to all members annually to a committee consisting of Messrs. Latham, Green and Elliot, with power to act.

The standing committees for the year were re-appointed the same as for the preceding year, except that the name of Prof. N. E. Hansen was added to the committee on nomenclature.

One hundred dollars was appropriated to pay expenses incurred by Prof. S. B. Green in connection with investigations to be made in his proposed trip to western Europe along the line of adaptation of horticultural methods in that country to Minnesota conditions.

Adjourned sine die.

WYMAN ELLIOT,
Chairman Executive Board.

A. W. Latham, Sec.

Record of meeting held in county commissioners' rooms, court house, Minneapolis, 5 p. m., Dec. 8, 1899.

Present, Messrs. Elliot, Harris, Andrews, Green and Latham.

O. M. Lord, the treasurer-elect, having declined to serve, H. M. Lyman was appointed by unanimous vote of those present to fill the vacancy till the next annual election.

Adjourned sine die.

WYMAN ELLIOT,
Chairman Executive Board.

A. W. Latham, Sec.

Record of meeting held in the secretary's office, Minneapolis, 8 p. m., June 18, 1900.

Chairman Wyman Elliot, Pres. W. W. Pendergast, Clarence Wedge, L. R. Moyer, J. S. Harris and Sec. A. W. Latham were present.

The secretary's bill for expenses from Dec. 5, 1899, to date was duly examined, audited and allowed, namely,

A. W. Latham, Sec.....$908.74

The "Gideon Memorial Committee," J. M. Underwood, chairman, reported recommending that the sum of $1,000 be raised for a fund to be called "The Peter M. Gideon Memorial Fund for the Promotion of Education in Horticulture," which fund when collected shall be deposited in trust with the Board of Regents of the University of Minnesota, the interest only of which is to be used as premiums for members of the class, or classes, in horticulture in the Minnesota School of Agriculture, upon such conditions and under such circumstances as a board, consisting of the dean of said school of agriculture, the professor of horticulture of said school, and the president and chairman of the executive board of this society, may from time to time decide. This report was unanimously accepted and adopted, and the secretary directed to prepare and send out a circular letter to the members soliciting subscriptions to the proposed fund.

Adjourned sine die.

WYMAN ELLIOT,
Chairman Executive Board.

A. W. Latham, Sec.

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